Reviewer’s report

Title: Exploring the relationships between International Classification of Functioning, Disability and Health (ICF) constructs in people with osteoarthritis.

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Reviewer: Helene L Soberg

Reviewer's report:

This is an interesting article in which a limited part of possible pathways in the ICF is examined. There is a fundamental problem with the authors’ choices related to the ICF in this article. They have chosen not to mention that in a biopsychosocial understanding disability is a phenomenon constructed through the interactions between functioning and the contextual factors of the environment and the person. Rather, they avoid the topic and only present biomedical arguments for testing biomedical pathways. I find this insufficient. The introduction should present why the exclusion of contextual factors is meaningful in spite of the biopsychosocial model presented in the ICF.

1. Is the question posed by the authors well defined?

Major comments

The question posed by the authors is expressed as an aim of the study, but is somewhat incomplete.

The aim of the study should be described at the end of the introduction. Furthermore, on page 9, line 3 the authors refer to directional relationships between latent constructs that have been hypothesized. If this is part of the research question, it belongs as a hypothesis (?) in the introduction after stating the aim of the article. Did the authors expect a significant pathway from I to P? In the method and result sections, they explore three two-factor models. This is not described under aims, or posed as a research question. Was an aim of the study to explore pathways for all patients vs. patients with confirmed OA since they present the latter in the result section?

The introduction has two main parts; the necessity to explore the biomedical pathways and the necessity to use “uncontaminated” measures to do so. The relevance of a biomedical pathway seems more valid within a hospital setting than a community setting.

The authors should explain in a better way what they mean by contaminated measures of the constructs. In addition, they describe methodological flaws in other studies, and argue for the use of SEM.

Page 4: The HAQ and SF-36 were linked to the ICF in 2004. (Stucki et al 2004), please add this information. In referring to the article by Fransen et al., the authors state that the low correlation between I and P may be caused by
subscales containing items tapping more than one construct, and refer to their own article, ref 10, thus preparing the ground for the use of the Ab-IAP. In Table 3 in their own article (Ref 10) in which they have performed analyses of what OA instruments measures with respect to the ICF, there appears to be very little contamination of the constructs in SF-36 and HAQ except for AP in HAQ. Thus, I find it somewhat doubtful that the weak association between I and P can be explained by contamination of the measurement instruments. Furthermore, in Harris et al.’s intention was not to explore the impairment and activity dimensions as separate variables for physical and mental health. Please make sure that the facts the research questions are sufficiently based on the literature you refer to.

I appreciate the thought of using measures that have “pure” items with respect to IAP. However, the authors should also pose arguments for why it is interesting in exploring the pathways by SEM in itself, not as a response to weaknesses other studies.

Minor comments and Discretionary revisions:

Page 3: Spell out Myocardial Infarction (MI)

Page 4 last paragraph: “The use of structural equation modeling methods would be preferable as this can evaluate models of both the measurement of the constructs and the structure of the relationships between constructs.” You might relate this to clinical aspects in the introduction as well.

Page 4, paragraph starting with: Similarly, Harris… The sentence with the children (ref12) seems thrown in. Please rewrite/reorganize.

Figure 1: Explain the figure in the text. Please add this information in the figure legend as well.

Page 3, second paragraph I find somewhat imprecise: Both intellectual and other psychological factors were part of the ICIDH-1980. However, appraisals and choice of coping strategies based on cognitive functioning may be considered personal factors which were not in the 1980 version.

In the introduction references 3, 4, 8, 10, 13, 14 are articles by the authors of this current article. It should be made clearer to the reader that these are former publications from the group when you refer to them.

2. Are the methods appropriate and well described?

Major comments:

Did some patients without OA have hip/knee replacements since they did not have a confirmed OA diagnosis?

Why did you select a revised (?) version of the Ab-IAP, or selected only some items from the original instrument. I assume the data collection was performed once, at the time when you developed the Ab-IAP? (The I3 item contains an activity category (d4154), an item you would consider a contamination.) Moreover, in the Ab-IAP the I concerns pain and joint stiffness, and the P concerns only social function. This should be kept in mind for the discussion of
the pathways since this limits the generalizability of the pathways for the I and P factors

Minor comments and Discretionary revisions:

Is the study sample the same as in ref. 17?

Page 6, under Measures, line 9: Please use abbreviation at first time mention: Confirmatory factor analysis (CFA) or do not use abbreviation on page 9, under Results, The Measurement model.

3. Are the data sound?

As long as the revised/derived Ab-IAP is a valid and reliable instrument, the data appears sound.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

Major comments

The table and figure texts should contain all the necessary information for the reader to understand their content without turning to the text. Abbreviations. Cut-off criterion for CFI and RMSEA robust in Table 2.

Figure 1 is incomplete. An arrow indicating a biomedical pathway from Body Function/structure/Impairment to Participation (in red) is lacking. The explanation in the text should be moved to the figure text.

Figure 2: The figure text should say that this shows the results of the Lagrange multiplier test. E=error variances. Circles are… Large shaded squares represent… Square boxes…. Arrows….

Figure 3: ** =p<??

As mentioned under introduction, it is not clear whether the difference between patients with/without a confirmed OA diagnosis is an aim/research question in the study. If not, Figure 4 should be omitted.

5. Are the discussion and conclusions well balanced and adequately supported by the data?

Major comments

The discussion starts with referring to a first stage which is not described in the article, but in a supplementary file, whereas the article mainly concerns stage two. This should be clarified or changed.

The finding that the IP path does not appear to be a significant path for people with OA is limited to the pain/stiffness impairments on social function which are what the I and P items cover.

In the discussion the authors reintroduce aspects of the biopsychosocial model
which they in the introduction discarded as a premise for their study testing biomedical pathways. The authors should be explicit when the contextual factors are reintroduced in the discussion. The discussion refers to surgery (procedure/environmental factor), pharmaceutical treatment/medication (environmental factor) and rehabilitation program (environmental factor) to reduce activity limitation. In addition, personal factors such as control beliefs, individual goals contribute to the disability process. Hence, the authors should be clearer about how contextual factors contribute to the disability process/participation restrictions.

There is an option in the ICF classification to denote the d-categories of activities and participation into A and P categories. (See ICF p 14.), and the study supports this option. You should state that this is an option when using the ICF.

6. Are limitations of the work clearly stated?

Major comments

No, the only limitations mentioned by the authors are activity limitations. The limitations of studying a biomedical pathway should be discussed. The limitation of the items in the Ab-IAP should be discussed.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

Minor comments and Discretionary revisions:

The authors refer to work of others, mainly the WHO and the WHO ICF center in Munich. Eleven out of 31 references are former published articles from one or more of the authors of this present article.

8. Do the title and abstract accurately convey what has been found?

Minor comments and Discretionary revisions:

The authors state in the abstract and the article that biomedical pathways of the ICF are explored. I think the heading promises too much, and could rather be: “Exploring biomedical pathways between the International Classification of Functioning, Disability and Health (ICF) components of functioning in people with osteoarthritis”.

9. Is the writing acceptable?

Yes

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the
statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.