Reviewer’s report

Title: The discordance between clinical and radiographic knee osteoarthritis: a systematic search and summary of the literature

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Reviewer: Martin Englund

Reviewer’s report:

In general I appreciated reading this manuscript by the Dr Bedson and Dr Croft who takes on the challenging task of doing a literature review about the discrepancy between radiographic knee osteoarthritis (OA) and knee symptoms. The findings are not novel, but still interesting for researchers in the field.

The questions posed by the authors are well defined, but methods are not always sufficiently detailed and sometimes unclear which limits my enthusiasm somewhat (as further detailed under major compulsory revisions below). The discussion and conclusions are appropriate but please see also my comments under “minor essential revisions”.

- Major Compulsory Revisions

General:

It is noteworthy that the authors mention the definition of OA in the introduction as one of the two main reasons for discrepancy, but then they do not present radiographic data other than basically the view used for each study. In results, the authors give examples of "intra-study" x-ray severity grading but nothing on "inter-study" x-ray severity grading which likely affect the proportion found with knee pain. The definition of radiographic OA is still unclear.

In addition, the authors sometimes mix the concepts of “radiographic OA” and “radiographic change”, which makes it further confusing as these two are not necessary the same. E.g. an OARSI JSN grade 1 in absence of any osteophyte or a Kellgren & Lawrence grade 1 is in general not considered as “radiographic OA” although there is a “radiographic change”.

These concern (above) will most likely not change any of the overall results or conclusions of this paper, but I believe it is still necessary to give the reader the “full picture” to be able to compare the different studies (in line with the definition of knee pain, which is carefully detailed in table 5). Therefore, in addition to the existing tables, I suggest a table (or an extra column in a pre-existing table) to detail the definition used for "radiographic OA" in each paper (or for the comparison made if it is altered from the original publication).

- Minor Essential Revisions
Abstract-Aim: “...in older people with...”. As this paper also refers to middle-aged and even younger individuals, I find the wording misleading. I suggest simply “...in adults with...”

Introduction:
There are several other factors that may explain discrepancy between radiographic OA and knee pain than those mentioned, e.g., not only how radiographic OA is defined but also the radiographic technique used and knee positioning (radiographic protocol, semi-flexed or straight knee, etc affects prevalence). I suggest these to be mentioned as well, at least briefly.

Also, the population studied is critical (selection bias). How identified? Region? Non-participant rate? Prevalence of obesity? etc etc, not only basic demographics such as age and sex.

Methods:
Page 5 "..those which concerned population and not...” Please change to: "those which concerned population-based observational studies and not..."

Page 14 "..osteophytes on any view were better predictors ed of... " (Typo)

Page 15 "Table two shows that American Caucasians...." (weird line spacing)

Table 3 Typo in heading: "positve"

Limitations:
Please consider include that other factors related to the radiographic protocol such as weight-bearing knee or not, extended or semi-flexed knee positioning, use of fluoroscopic guidance etc was not considered in analysis as a factor that affect the frequency of OA and thus the association studied (i.e., not only the radiographic view affects the association studied). In addition, reading criteria/OA definitions used etc may also have substantial impact.

Further, I think the authors should make it clearer that there are many other sources to knee pain than can be explained by OA, thus a discordance (pain-radiographic OA) is highly expected (the authors correctly mention depression but there are also several knee specific conditions other than OA that is related to knee pain).

- Discretionary Revisions
Abstract:
Background: I think it is too strong to state that "do not match", better use more appropriate phrasing such as "relatively weakly associated" or something similar

Introduction:
""...clinical symptoms and signs may arise from sources other than the contents of the knee joint..."
I think the authors also should state that symptoms of OA may also arise from knee structures NOT visible on a plain x-ray (bone marrow oedema, low grade synovitis etc), i.e. in absence of typical radiographic OA changes (such as joint space narrowing or osteophytes). As we all know radiographic changes of OA come relatively late in the course of the disease.

"fit" I'm not sure if this is the best wording as in UK medical English it may suggest seizure (I believe?). Please consider use other more commonly used wording such as "correlation", "agreement" or similar term or phrasing.

I hope my comments will be helpful!

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests