Peer Review Report

Review Report on Certainty of the Global Burden of Disease 2019 modelled prevalence estimates for musculoskeletal conditions: a meta-epidemiological study

Review, Int J Public Health

EVALUATION

Q 1 Please summarize the main theme of the review.

This is a meta-epidemiological study which examines the certainty of estimates of the global burden of disease of musculoskeletal conditions (including low back pain, neck pain and knee osteoarthritis). For this purpose, it applies the GRADE framework for the assessment of the certainty of evidence to 72 primary studies that were used in the 2019 Global Burden of Disease study to derive disease burden estimates for the aforementioned conditions. Overall, it is an interesting paper on an important topic which seems worth publishing, but with some important limitations.

Q 2 Please highlight the limitations and strengths.

Strenghts:
• The paper addresses a question that is of relevance and interest to the public health community at large, namely the certainty of the evidence underlying the Global Burden of Disease (GBD) studies estimates
• It applies an innovative method, namely applying GRADE to the primary studies used by the GBD 2019 study
• The manuscript reads well and is clearly structured

Limitations:
• The reporting is currently still incomplete, and information on some key steps in the analysis (e.g. the selection of countries which are analysed) is missing, which makes it difficult to fully assess how representative and meaningful the results are

Q 3 Please provide your detailed review report to the authors, structured in major and minor comments.

This is an interesting study on an important topic. There are, however, a number of issues which should be addressed beforehand.

Major comments:

Please consider using a reporting guideline – there are several which may be relevant for your work, including the following:
https://www.equator-network.org/reporting-guidelines/guidelines-for-reporting-meta-epidemiological-methodology-research/
https://www.equator-network.org/reporting-guidelines/gather-statement/

Line 102-104: Please provide additional details on how you selected the five countries on which you focus, as this choice may have had a quite large impact on your results. The current explaination is insufficient in my view.

Line 104-106 ("We excluded other sources of input data, mainly opportunistic surveys, and insurance claims, as they were not identifiable through the GBD website.") This might potentially be a quite important limitation

of your study, depending on the role these other sources of iput data play in the GBD estimates. Did you try to contact the GBD collaborators to aks them for details on these additional sources of input data? Providing more details on this, and critically discussing this as a limitation seems important.

Minor comments:

Line 107: Please provide a reference to your OSF registration

Line 152: Please provide some more details (e.g. 2-3 sentences) on the GRADE approach for modelled evidence (many readers will be familiar with GRADE in general, but not with the relatively new GRADE approach for modelled evidence)

Line 155-156: Most commonly, GRADE is applied to bodies of evidence on the effects of interventions. Here, you apply it to epidemiological studies on prevalence. Please explain if specific GRADE guidance is available for applying GRADE to prevalence estimates, and/or how you adapted the traditional GRADE approach for this purpose (e.g. the criterion of a dose-effect relationship does not seem to apply to prevalence estimates)

Line 252 ("Importantly, we did not consider additional GRADE criteria to be applicable.") Please explain to which criteria this applies.

Line 279-281 ("An interesting result to emerge from the GRADE application, was the observed consistency and precision of modelled prevalence outputs, as judged by the direction and width of modelled uncertainty intervals, with independence of the number of primary studies.") This sentence is very long and difficult to understand. Please consider rewording.

Line 284: Please provide some more information on these "major advances", and on how the Burden of Proof methodology is applied to GBD estimates, and how it differs from your approach.

PLEASE COMMENT

Q 4   **Does the reference list cover the relevant literature adequately and in an unbiased manner?**

No concerns

Q 5   **Does this manuscript refer only to published data? (unpublished data is not allowed for Reviews)**

Yes.

Q 6   **Does the manuscript cover the issue in an objective and analytical manner**

Yes.

Q 7   **Was a review on the issue published in the past 12 months?**

No.

Q 8   **Does the review have international or global implications?**

Yes

| **Q 9** | **Is the title appropriate, concise, attractive?** |

Yes

| **Q 10** | **Are the keywords appropriate?** |

Yes (it may, however, be a good idea to also include "global burden of disease" in the key words)

| **Q 11** | **Is the English language of sufficient quality?** |

Yes

| **Q 12** | **Is the quality of the figures and tables satisfactory?** |

Yes.

QUALITY ASSESSMENT

Q 13	**Quality of generalization and summary**	▮▮▮▮▯
Q 14	**Significance to the field**	▮▮▮▮▯
Q 15	**Interest to a general audience**	▮▮▮▯▯
Q 16	**Quality of the writing**	▮▮▮▮▯

REVISION LEVEL

| **Q 17** | **Please take a decision based on your comments:** |

Major revisions.