Author's response to reviews

Title: Heterogeneity in health status and the influence of patient characteristics across patients seeking musculoskeletal orthopaedic care - a cross-sectional study

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Response to Editors and Reviewers
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Dear Editor and Reviewers,

Thank you for your thoughtful comments on our manuscript. Based on these comments, we have edited our manuscript and feel it is improved and clearer. Our responses are noted following the specific comments. Changes to the manuscript text are highlighted in red. Thank you for considering our manuscript for publication in BMC Musculoskeletal Disorders.

Referee 1:

This is a clearly written article, and it could be very interesting, but there is a lot of analysis and it could be simplified. I find it difficult to interpret as is.

Response: Thank you. We agree with the reviewer that there is a lot of analysis. By the nature of the question that we asked, the extent of the analysis was needed. The authors struggled with how to best present the data so as to ensure that the numbers were not overwhelming. Clearly, we did not succeed. We have, therefore, edited the tables and trust there is greater clarity.

I don't understand what the numbers are in the tables of path regressions. Are these beta coefficients?

Response: These are beta coefficients. Unfortunately, we failed to label the headings accordingly. We have edited the heading within the Tables to make clear that these are beta coefficients.

I find these difficult to read as I have to read all of the confidence intervals to find out if factors are significant or not. I suggest that the authors streamline the tables, add p values and bold significant values.

Response: In order to minimize the already vast number of estimates appearing in the tables, we have opted to not include p-values, and, rather, have bolded those values that are statistically significant (i.e. p<0.05).
I think the biggest issue is that the age structure of the groups are not comparable, and that skews all the socio-demographic variables. I suggest that the authors present that data in two ways: firstly non-age standardised, then age-standardised. If there are differences between the cohorts on the non age standardised analyses but the differences disappear on age-standardised analyses I would find this compelling evidence of the authors hypotheses.

Response: While we acknowledge that a statistically significant difference in mean age was found between the groups, recognize that the largest difference between any two of the cohorts was only 5.5 years; in fact, three of the cohorts had nearly identical means. To perhaps better show how similar the age distributions were between the cohorts, we present below the distribution of ages (by age groupings) for the four cohorts. Further, our regression analyses adjusted for age, precisely to account for any variations between groups. Unless we have misunderstood the reviewer, the regression analyses would have to be stratified by age based on the suggestion, but this would supposes that the associations between our predictor variables and the outcomes differ depending on age. However, we have no reason to believe this to be the case.
Associate Editor comments:

"I have a number of comments that I hope you will consider if you decide to submit a revision (which I hope you do, because I do think this is a very interesting study).

Minor edits:

1) Methods section: can you provide the n's for the different reasons for exclusion?

Response: We incorrectly used the word ‘exclusion’ where we should have continued to write as eligibility criteria. Unfortunately, we do not have n’s representing patients that were approached and found not to be eligible. We have edited the text accordingly.

2) Results section, page 8, last full paragraph: you can say "adjusted for demographic factors, comorbidity and BMI" rather than listing all of the variables in the table

Response: Much cleaner, indeed. Thank you for the suggestion. The text has been edited accordingly.

3) Table 1: add "missing" group as another line for education variable - I want to know how big this group is, since it's included in the other tables; also please separate overweight and obese, since these are separated in the other tables. I also think it would be useful to add BMI to the mean (sd) variables, since this would provide additional descriptive info about the distribution of this variable

Response: As requested, ‘missing’ group was added for the income variable, overweight and obese was separated, and BMI was additionally presented as mean (sd).

4) Table 3: Rearrange so the surgical cohort results come first, and then the age, sex, etc., so that it matches the order in which you discuss the table in the text

Response: Perhaps we misunderstand the reviewer’s comments here. Table 3 presents results from the cohort-stratified analyses. The columns represent the individual cohorts, with the four Tables (Tables 3, 4, 5, 6) specific to the four health domains.

5) Table 3-6: put n's for each column in the top row (same as in Table 1) - I think it's useful as a reminder that the sample size for hip/knee is about twice as big as for the others (which is going to influence the precision of these estimates - you're more likely to find a "statistically significant" effect in this group compared to the others, even if the actual magnitude of effect is the same in each of the groups.

Response: An excellent suggestion; thank you. The tables have been edited accordingly.
Bigger comments:

I would suggest that you think about your results, and discuss your results, more from the perspective of "effect size" rather than statistical significance (note - this suggestion directly contradicts some comments from the review that I did obtain). There were situations in which you had essentially the same effect size in two different groups, but one lower bound barely included 1.0 and the other lower bound barely excluded it. These should not be presented as indicting differences in effect. There were also situations in which something that was really interesting about the patterns (e.g., one estimate being markedly different from the others) wasn’t noted. For example, on page 9, the description of Table 4 (physical function), you say "Female sex was associated with worse scores within the elbow/shoulder and hip/knee cohorts." But when I look at Table 4, I see estimates for female sex of 5.1, -6.9, -4.1, and -6.2 for foot/ankle, elbow/shoulder, neck/back, and hip/knee, respectively. What stands out is the difference between foot/ankle and all of the others. A more descriptive (and useful from a clinical perspective) summary of these results would be "Women had lower scores in three of the cohorts, (approximately 6-7 point lower for elbow/shoulder and hip/knee, and 4 points lower for neck/back), but this relationship was not seen in the foot/ankle cohort, in which mean scores were approximately 5 points higher among women." I suggest you go through each of the paragraphs describing your results, and ask yourself if you are optimally "describing the picture" of the data.

Response: We thank the editor for highlighting these issues. On re-reading the paragraphs, we agree that the ‘picture’ was being lost. We have edited the corresponding paragraphs in the Results and believe we have brought greater clarity to the findings.

I also suggest deleting Table 7 (and possibly replacing with a table that more accurately summarizes the "clinically significant" rather than "statistically significant" differences in the results),

Response: On reconsideration, we agree that Table 7 does not add substantively to the manuscript. As suggested, we have deleted it, and decided not to replace it as there are already 6 Tables within this manuscript.

and going through the discussion section with the same kind of focus on whether you are highlighting what you want to highlight."

Response: Again, we thank the editor for highlighting these issues. As was done for the Results, we have edited several paragraphs in the Discussion and believe we have brought greater clarity to our findings.

Editorial comments:
Please revise your manuscript to provide the name of the ethics committee that approved your study.

Response: The text has been edited to include the name of the ethics committee.