Reviewer's report

Title: Association between Socioeconomic Status and Pain, Function and Pain Catastrophizing at Presentation for Total Knee Arthroplasty

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Reviewer: Barton Wise

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Feldman and colleagues studied 316 patients presenting to an academic hospital for total knee arthroplasty (TKA) and examined whether socioeconomic status (SES) defined either individually using education as a proxy, or population level using area-level SES as geocoded by address, is associated with WOMAC pain or function or with pain catastrophizing. The report that at presentation for TKA higher SES patients by both measures had lower pain, higher function and lower mean pain catastrophizing.

This manuscript addresses an important link in the chain of connection between economic status and surgical use and surgical outcomes. As noted by the authors, prior studies have established that lower SES is associated with increased progression of knee pain and disability, lower rates of surgery, more post-operative events, and worse outcomes. Prior studies have also demonstrated that worse pre-surgery pain and function is associated with worse surgical outcomes. The present paper attempts to fill in the connection between SES and surgical outcomes through pain and function, and overall succeeds in convincing the reader that this is an important element of the story.

Overall, the authors have used well-considered approaches to answering their questions, and I have no important criticisms of their approach. Their questions are well-defined, their methods well-described, the data appears sound, the discussion and conclusions are overall well-balanced and reflect their findings, and the title and abstract describe accurately their subject and findings. The authors describe in detail the limitations of the work. They clearly acknowledge work on which they have based their ideas. The writing is overall well-done, with just some stylistic quibbles.

I have no Major Compulsory Revisions, nor do I have other Minor Essential Revisions. All of my suggestions fall into the category of Discretionary Revisions.

The authors frequently use descriptors that emphasize the magnitude of findings (e.g. the first sentence of the abstract conclusion "...area-leve SES had considerably lower pain..."; the first sentence of the Background "...hip joint arthroplasty are rising substantially..."; 3rd paragraph of Conclusions "...and coping are strongly associated...."; etc). This feels unnecessary to me and I would eliminate these modifiers.

In the second paragraph of the Background, the authors describe a study
showing "an association between lower social class and increased progression of knee pain and disability over time". I assume that the authors mean increase rate of progression, but perhaps they can make this explicit, since rate of change factors into some of their arguments about why they see the differences by SES that they do.

In the second paragraph of the Statistical Analysis section, the authors say they "performed a second set of multiple linear regression analyses that permitted more facile interpretation at the individual subject level". Usually I think of "facile interpretations" as referring to interpretations that oversimplify and thereby obscure the underlying meaning of something. I think the authors may mean instead that their regression permits a clearer understanding at the individual subject level.

The authors measured the MHI-5 and report on it, but ultimately excluded from adjusted models but did find important associations with functional status. It would improve the paper to include a paragraph discussing potential reasons for the negative and positive findings they report for MHI-5.

It is also of interest that the authors found that older age was associated with better functional status and lower pain catastrophizing scores. Again, this probably merits some discussion in the conclusions section.

The authors should consider either starting or finishing the Conclusions section with a paragraph that restates in simple language their main findings in a couple of sentences. This serves to reinforce the central point of the paper.

The authors propose that one explanation for their findings is that TKA may not have been indicated for some of the higher SES persons presenting for TKA. This is an interesting possibility and may in some cases be true, and the authors delve into this in detail, presenting explanations for why this may be the case in paragraphs 4 and 5 of the Conclusions section. However, another explanation for the findings might be that higher SES individuals are presenting mostly at appropriate times for TKA, but lower SES persons are waiting beyond the point at which consideration of TKA is appropriate, either due to financial considerations, lack of access, differences in work environments, etc. I think it would behoove the authors to explore this possibility in the Discussion section as well.

The authors give an extensive "limitations" paragraph. However, there is no corresponding "strengths" paragraph. Given that substantial strengths do exist in their study, I would suggest adding such a paragraph toward the end of the Conclusions section.

**Level of interest:** An article of outstanding merit and interest 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 have had a contract with Pfizer, Inc. within the last five years for a research analysis. Also, one of my prior publications is referenced in the present manuscript.