Reviewer's report

Title: The predictive effect of fear-avoidance beliefs on low back pain among newly educated health care workers with or without previous low back pain. A prospective cohort study

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Reviewer: Charlotte Leboeuf-Yde

Reviewer's report:

I have read this manuscript with interest but think that it would benefit from some more work. All comments before are major compulsory.

Questions well defined?
Yes.

Methods appropriately described?

I found the methods section difficult to read at times:

1. Was the outcome variable measured both at base-line and at follow-up?

2. The fear-avoidance questions need to be clearly described (additional file?)

3. What was the rationale for the categorization of low, medium and high physical workloads?

4. There were two sets of predictor variables, the psychosocial and the physical work, I take it? The co-variates seem to be sneaked in as variables that were collected at follow-up, i.e. TOO LATE. If you want to use them anyway, you need to include an honest discussion of this and arguing for the fact that leisure time physical activity, smoking and BMI are likely to track throughout life, hence they may have been collected at follow-up but anyway likely to be "predictor" or moderating variables from a prospective perspective.

5. Characteristic of sample: Here you introduce "ever" experienced LBP but you did not describe this variable previously under the heading of outcome varaible, where you only talk of LBP in the past 12 months.

6. A total of 2,690 Health care workers were included in the analysis... and the sentences that follow should be moved to the Result section.

7. i) Under statistical analysis, you talk about entering all potential variables into the analysis; I presume you missed out a word after "potential". ii) The sentence "this step was repeated until all variable sin the final model were significant one by one" is awkward. Where does the "one by one" belong? iii) Analysis in plural is "analyses". iv) Please describe somewhere your outcome variables.
Data sound?

1. Yes, but their reporting feels messy to me. First of all, you need to define in your methods section what you mean by a positive and significant finding, and stick to it. Please check your tables and your explanatory text to see that you do not "overstep" the usual interpretation of significant findings. I.e. confidence intervals below 1 and your finding should not even be mentioned!

2. What is the point in reporting ORs for 1-7 days, 8-30 days and more than 30 days the way you do? You list the findings that were positive, here and there, but these findings should either make sense or be suspected of being chance findings (there are many tests here, so chance findings are quite possible). I would have preferred it if you looked for a dose-response and reported your data that way. E.g. did the estimates change in a logical way from young to old, from low to high? Or did the estimates increase gradually from a few days of LBP to many days of LBP?

I suggest that you re-think and re-write your result section to make it readable and understandable and useful. When I read your Discussion after the Result section, I feel stupid; and when readers feel stupid it is usually because the text is messy or confusing. It could of course also be because the reader IS stupid, but let's hope this is not the case. Anyway, I had to get to the Discussion before I could see what you had actually found. And, in fact, it was here I learnt that although this was a prospective study your analyses were ased on cross-sectional measurements in relation to physical and psychosocial work factors??! I do not understand, and I do not feel like reading this manuscript a third time.

3. The tables need to be more succinct. E.g. Tables 1 and 2, please describe them so that they can stand on their own. Also, it feels dishonest when you talk about risk factors and include variables that were collected at the time of the follow-up... In addition, please explain in the text of the tables what sort of analyses you used.

4. Fig.1 is completely lost on me. Musculoskeletal pain last 12 months. How many people had pain in the various anatomical regions? FAB-work and FAB-physical activities? I can see that this is descriptive data, but would it not be better with percentages here?

Discussion/conclusion/limitations?

Not ready to deal with those aspects until the Methods and Result sections have been cleaned up.

Acknowledgement of previous work?

1. I disapprove of sloppy referencing, although I know it can be tempting.

If you write, as you do, in the Background that "The prevalence of low back pain
is high among health workers compared with other occupational groups" then it is not acceptable to reference only with two articles on health care personnel and home care personnel and pretend that these articles represent work in which "other occupational GROUPS" were studied. You need a study or two that actually compares different occupational groups or a review article or several single studies of different occupational groups, which make it possible actually to understand the relative prevalence of LBP in different occupational groups.

2. The third sentence in your Background section is also incorrectly referenced, as far as I can see. How can your references 1, 2, and 4 possibly report on studies of sickleave and disability pension among health care workers AS COMPARED TO OTHER OCCUPATIONS in the Scandinavian countries?

3. When you say in the third paragraph on that same page that "Guidelines based on LBP research recommend LBP treatment by..." I turn my nose up when I realize that one of your references deals with PREVENTION.

4. Please, check the veracity of ALL your references!

5. Incidentally, the habit to divide LBP into 1-7 days, 8-30 and more than 30 days is something that you see in virtually all work coming from Odense. If you want to reference its use, it is no good just giving a haphazard reference to somebody who did use it. You either put in a reference to the first time it was used. But in fact, there is no need to put in such a reference at all, unless you include a reference on how its use was validated in some way. Incidentally, it has been validated in an epidemiologic study where it was shown that associations with various predictors differed depending on the definition of how long people did have LBP in the past year. That is why it is interesting to divide LBP into different periods of total duration.(Leboeuf-Yde C, Lauritsen J, Lauritzen T: why has the search for causes of low back pain largely been nonconclusive? Spine 1997;22:877-81.) I mention this, not because of narcissistic tendencies, but because I think that we need to pay more attention to how we use the past literature. Incorrect referencing tends to continue as a chain reaction, when other authors steel the references from others and keep on being inaccurate, or even increasingly more inaccurate. Back to your use of LBP 1-7 days etc. Did you find that the different definitions meant anything in this study you did? If not, you might as well just look at LBP, which would give you stronger estimates and possibly a better picture of the outcome pattern...

Some of my comments will not be welcome but I suspect that the end result will be very good and I am looking forward to reading this again, when it has obtained a clearer shape.'

Bon courage!
Charlotte Leboeuf-yde

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being
published

**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