Reviewer’s report

Title: The Relationship between Low Back Pain and Professional Driving in Young Military Recruits

Version: 0 Date: 20 Nov 2017

Reviewer: Louise Fleng Sandal

Reviewer's report:

Review, BMSD-D-17-01174

Summary:

The manuscript reports data from a cohort study on low back pain in Israeli soldiers and investigates the relationship between occupational exposure to driving (vibration) and incidence and exacerbation of LBP in relation to other occupational groups without exposure to driving. The cohort concerns young men, in the age span of 18-21 years. The manuscript reports incidence of LBP in medical categories of increasing severity and compares incidence and exacerbation across groups. The manuscript concludes that driving (occupational exposure to vibration) that driving as a profession was not identified as a risk factor for low back pain.

Major questions/suggestions for corrections:

Abstract, background: page 2, line 19-21:

There is inconsistency between the aim described in the abstract and in the introduction text. I suggest using a consistent wording.

Abstract, methods, page 2, line 7:

There is inconsistency between the study designed described in the abstract and in the methods section. Please clarity and use consistently.

Introduction: page 4, line 6-8:

Could you please support this statement with a reference to literature?

"High prevalence of back pain, early degenerative changes of the spine and herniated lumbar disc problems and sciatica, have been consistently reported among vibration-exposed occupational groups."
Although the introduction mainly concerns the link between LBP and the occupational exposure to vibration during driving, the aim of the study is very vaguely described. Please clarify the study aim and ensure consistency in aim between abstract and introduction.

"This study aims to provide more insight into these matters."

Methods section, general:

The methods section lacks information concerning the current trial. Almost all sections refers to a previously published study for information (reference 17), and a vast amount of additional text in the methods sections refers to the difference between the previous published trial and the current trial. I was not able to review the methods for this study without consulting with the previous publication.

Based on the current methods section, the methodological quality of the study cannot be reviewed. Please consider a rewrite of the methods section.

Methods, page 5, line 3:

In the methods section of the abstract (page 2, line 7), it is stated that "the study is a controlled, historical-prospective study." In the methods section (page 5, line 3), it is stated that "This study was planned as a retrospective cohort study". Please clarify the study design.

Methods, population medical categories:

From the text available I am unsure whether the placement into medical categories was based on self-report or clinician evaluation. Please clarify.

Methods, population medical categories:

In the start of the paragraph it is stated that the medical categories included 7 tiers. However, only soldiers in medical categories 1-3/4 are described in the results section. Please clarify the use of these categories as inclusion/exclusion criteria.
Methods, data analysis:

Paragraph complete copy from reference 17.

Methods, Ethics approval and consent to participate:

In this section (page 6, line 10-11) it is stated that "The IDF ethics committee waived the need for formal informed consent since actual patient files were not reviewed in this study but rather computerized data only." However, when consulting with the previous published manuscript, it is stated that "To formalize this process, a board of military physicians then reviewed each recruit's medical records collected since birth, which includes an examination to establish and approve a functional limitation grade classification."

Please comment on this inconsistency and provide a more detailed description of whether or not actual patient files were review and how this affects the need for consent to participate.

Results, page 6, line 13.

It is stated that 80.599 soldiers were included in the cohort. However, there is no statement of how many where invited/screened and what the reasons to exclude were for those not included. Please provide this information if possible.

Results, page 6, line 14-24:

In the methods section, the categories 1-4 are stated for the population. However, only results for categories 1-3 are presented. Please elaborate on why category 4 was omitted from the results.

Results, page 7, line 23-24:

At the end of this results section it is stated that "No significance was observed when comparing heavy-vehicle (TD) to light-duty drivers (CD)." This is the first mention of difference between the two included groups of drivers and how this might relate to occupational vibratory exposure.

I think it would strengthen the manuscript to include some more information about this in the introduction or methods section.
Discussion, page 8 line 5:

Here the population is referred to as "recruits". In other parts of the manuscript the description "soldiers" and "driving professionals or other administrative professions" are used.

Please elaborate on the study population, in order to avoid any confusion about the population studied.

Discussion, page 8, line 14 - page 9 line 4:

Given that the aim of the study is to investigate the relationship between occupational exposure to vibration during driving and LBP, I suggest to move the rather lengthy section about incidence rate to a latter place in the discussion.

Discussion, page 9, line 1-4:

Reference 15 is used in the initial part of the sentence to describe differences from previous studies to the current trial, as well as in the last part of the sentence to describe similarities to the current trial.

"The difference is explained by this study's end point; Category 4 represents severe LBP with clinical and imaging findings whilst other studies report about a first event of LBP [15, 20] or first hospitalization [19]. Studies with a similar design to ours had similar results [14, 15]." Please elaborate on this, if possible.

Discussion, page 9, line 4:

The sentence mentions results for category 4 in the current study. However, there is no mention of category 4 in tables 1-3.

Please elaborate on how category 4 was used in the study.

Discussion, page 8, line 14 - page 9, line 4:

The paragraph nicely cites previous studies findings for incidence rates. However, there is little mention regarding age range for the current population and the comparison to other studies. Consider possibly adding some information about this aspect to the discussion.
The paragraph relates to the exacerbation of LBP, as stated in table 3. The start of the paragraph described that movement from category 2 or 3 to category 4 as an exacerbation of LBP. "The RR for the development of severe LBP with clinical and imaging findings (category 4) in soldiers who suffer from LBP occasionally without clinical findings (category 2) and in soldiers who suffer from LBP with mild clinical or imaging findings (category 3) was RR=1.38 (95% CI 1.17-1.64) and RR=3.83 (95% CI 3.12-4.71) respectively (table 2)."

However, the definition of this move as an exacerbation is not stated in the methods section. Also, upon reviewing the previously published study (as referred in the methods section), here it is stated that "The study endpoint per subject was defined as a change in the medical profile from the preliminary Categories 1-4 to either category 5-7, i.e. the development of a new episode of LBP for Category 1 or worsening of previous condition of LBP (Categories 2-4)."

Please elaborate on how an exacerbation of LBP was defined and applied in the current study.

In this paragraph it is stated that the basis for placement into medical categories was medical records. Please elaborate on this, in relation to the previous statement from the ethics paragraph in the methods section (page 6, line 10-11) "The IDF ethics committee waived the need for formal informed consent since actual patient files were not reviewed in this study but rather computerized data only."

Minor questions/suggestions for corrections:

Title missing on page 1 of main manuscript

Abstract: LBP is in () when used for the second time in the background paragraph.

Results: please use consistent reporting RR and p-values, in the text. (page 7, line 6-7).
Results (page 7, line 8), should AU be TD here?

Tables 1-3: the used abbreviations are not explained in table text.

Table 2: an * is marked in columns 3 and 4, however is significance it not explained.

Table 3: table heading states that the table shows 95% confidence intervals - these are not given in the table. P-values are given.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published
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