Author's response to reviews

Title: Prevalence of low back pain and associated occupational factors among Chinese coal miners

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Author's response to reviews: see over
Dear Editor,

Re: Prevalence of low back pain and occupational risk factors among the Chinese coal miners” (your ref: 2029232423583042 )

We thank you very much for giving us an opportunity to revise our manuscript. We appreciate you and reviewers for the critical but constructive comments and suggestions. We have studied comments carefully and have made changes, which are marked in red in the revised manuscript. In response to the reviewers’ comments, specific changes were described below:

In response to Referee 1:

1. First of all, the cross-sectional study design does not permit any insight of the etiology of back pain.
   
   It is really true as reviewer suggested that the cross-sectional study design does not permit any insight of the etiology. The text states “risk factors” changing to “associated factors”.

2. Why were workers helped to answer the questions?
   
   To minimize the potential non-response bias, epidemiology professionals studied the protocol of the survey and were specially trained techniques. Due to the low level of education in some miners, some questionnaires need face-to-face explanation, but these questionnaires were answered by respondents.

3. Why did the sample consist of many retired workers (and how many?)

   There are 26 retired workers who were asked to “fill in” the questionnaires and 26 retired due to disability, not due to age.

In response to Referee 2:

1. The title states “risk factors” changing to “associated factors”).

   As suggested, the change has been made.

2. How did the authors decide to include incomplete questionnaires and how many were incomplete?

   More than 90% of items completed were included in the analysis, 363 questionnaires were
3. 90% completion for all questions or specific questions
   90% completion for all questions.

4. Was the 90% cut off determined a priori?
   Yes. More than 90% of items ensure the reliability of the result.

5. Provide some information or statistics regarding the individuals
   The individuals were cluster sampled from a coal mining group in northern China. All underground miners and surface workers come from the branch coal mining were included.

6. How many workers retired due to age, and how many retired due to disability.
   There are 26 retired workers who were asked to “fill in” the questionnaires and 26 retired due to disability.

7. How did participants complete the questionnaires with “help of epidemiology professionals”?
   To minimize the potential non-response bias, epidemiology professionals studied the protocol of the survey and were specially trained techniques. Due to the low level of education in some miners, some questionnaires need face-to-face explanation, but these questionnaires were answered by respondents.

8. Your case definition is inconsistently and incorrectly referenced.
   “a 12-month period prevalence of LBP”, change has been made

9. These factors needs to be better definition of these factors.
   For personal factors, details about age, gender, height, weight, working hours and education level as well as life style factors, such as smoking were collected.

10. Are the occupational factors all binary or were categories collapsed.
    The occupational factors were categories collapsed.

11. Definition of all occupational factors needs significant refinement and explanation.
    Most risk factors for LBP have been defined and quantified in the text.

12. A statement about reliability of the questionnaire was stated, but no data or reference was given to support this statement.
    Kappa is 0.83, which has been added

13. The results section 1.
   “The prevalence in underground workers was higher than in the surface workers (67.2% vs 59.4%, P
The data was found in text not in tables.

14. The results section 2.

Table 1 show Age (36.8±15.1) with LBP and Age (32.3±18.1) without LBP that support this statement. “miners in LBP group were significant older than non-LBP group”.

15. The results section 3.

We have made correction according to the Reviewer’s comments.

16. The results section 4.

Working hours per week was statistically significantly different between the cases and non cases, which has been added in the results section.

17. The results section 5.

The contents have been added in Statistical analysis.

18. The results section 6.

Definition has been added in the text.

19. The results section 7.

We have been checked.

20. The results section 8.

As the reviewer suggested, estimates to the hundredths and/or an indication or statement about statistical significance is needed. The P values have been added in the tables.


We are very sorry for our incorrect writing.

22. The results section 10.

There are many “univariate” (adjusted for age) variables in the table that are statistically significant that have added in the results section.

23. The results section 11.

It is not statistically significant on vibrating tools.

24. Discussion - Personal factors: No data on advancing age is the main factor associated with LBP.

We have added data in the results section.

25. I would suggest changing “the main factor associated” to “strongly associated”

We have made correction according to the reviewer’s comments.

26. Seniority was not significant after adjustment for age, but no data or statistics are provided in the
We have removed this statement.

27. so-called healthy worker effect

As the reviewer suggested, we have deleted the content in the discussion section.

28. It is known that coal miners leave their job due to back problems and adverse work conditions.

Considering the Reviewer’s suggestion, we have deleted the sentence in discussion.

29. Last sentence under occupational factors states.

We agree with the Reviewer’s suggestion that this sentence is removed.

30. Minor Essential Revisions: Occupations - The sentence

We agree with the Reviewer’s suggestion that the sentence (“In this study…50 hours per week.”) was be moved.

31. Authors are missing a reference for the NMQ.

The reference for the NMQ was added in Background section.

32. There was only an 80.9% response rate among the participants

We agree with the Reviewer’s suggestion. The sentence was added in the result section

33. The first time OR and 95% CI are referenced it needs to be spelled out.

Changes have been made as suggested.

34. Third line under statistical analysis refers to “BP”.

It has been changed to “LBP”.

35. The sentence “Few studies have been conducted on the relationship between occupational factors and LBP.”

We have re-written this according to the Reviewer’s suggestion.

36. The term “fill in” referring completing the questionnaire, should be changed to “fill out”

We have made correction according to the Reviewer’s comments.

37. The second sentence under “low back pain” is a long run on sentence.

We have re-written the sentence according to the Reviewer’s suggestion.
In response to Referee 3:

1. “A pilot study of the test-retest reliability of the questionnaire was carried out to demonstrate that the questionnaires were reliable”.
   Kappa is 0.83, which has been added.
2. 1,900 workers were randomly sampled from 90,000 coal miners in northern China.
   —1,900 workers were cluster sampled from a coal mining group in northern China. It is a cluster sampling not random sampling.
3. Why were retired miners included to study “occupational risk factor” for back pain happened in the past 12 months for miners.
   These retired miners due to disability.
4. The $P$ value resulting from univariable regression for each variable is critical in deciding which variable should be in and which out.
   We have re-written this part according to the Reviewer’s suggestion.
5. I could not find an OR for age throughout the paper.
   We have added the OR in the table 1.
6. The definitions of a lot of variables, such as “high repetitiveness” and “extreme twisting or bending posture”.
   Most risk factors for LBP were defined and quantified in the text.
7. Surprisingly, the authors included 486 so-called ‘surface workers’ in all their regression analyses for ‘miners.
   The coal miners include both surface workers and underground workers.
8. In title the term “… occupational risk factors…” virtually is not scientific.
   We agree the Reviewer’s suggestion that physical loading has the same effect on the back, if any, when and where it happens and this are independent of occupations.
   We have changed “occupational risk factors” to “associated occupational factors”.
9. “Having had pain or discomfort during the past 12 month” is poor outcome.
   The NMQ (Kuorinka et al. 1987) has been documented to have acceptable validity and reliability.
   It was commonly used in epidemiological studies of LBP.

Changes have been made

1. L38(P3): “Job in the underground ……50 hours per week” was deleted.
2. L15(P4): “Each questionnaire item included five…..extreme bending posture (>2 hours per day), etc.” was added.
3. L27(P4): the statements of “OR and 95%CI” has been changed to “Odds ratio(OR) and 95% confidence interval (95%CI)”.
4. L33(P4): “To explore the possibility ……for underground miners and surface workers” was deleted.
5. L36(P4): “OR were obtained for each potential risk factor, adjusting for age …“ was corrected as
“Odds ratio (OR) and 95% confidence interval (95% CI)” was added.
6. L3(P5): “The response rate was 80.9% among the participants.” was added.
7. L12(P5): “Significantly different between the groups was found in hours per week.” was added.
8. L13(P5): “a strong association between increasing age and LBP for all workers.” was added.
9. L15(P5): “use of vibrating tools (OR 1.2, 95% CI 1.0-1.6), exposure to cold temperature (OR 1.6, 95% CI 1.3-2.0)” was added.
10. L17(P5): the statements of “extreme stooping posture” was corrected as “extreme bending posture”.
11. L17(P5): “static work posture (OR 1.4, 95% CI 1.1-1.7)” was added.
12. L19(P6): “Seniority was a significant …..It is known that coal miners leave their job due to back problems and adverse work conditions” was deleted.
13. L25(P7): “As we know, sufficient and sensible …… the incidence of musculoskeletal disorders” was deleted.

We have highlighted those changes in the revised manuscript. Although we have made changes in the manuscript according to reviewers’ comments and suggestions, these changes will not significantly influence conclusions of the present study. We think that the manuscript has been greatly improved in the present revision with you and reviewers’ help and is suitable for publication in your prestigious journal.

Looking forward to your reply in due course.