**Author’s response to reviews**

**Title:** Factors influencing disability in patients with chronic low back pain attending a tertiary hospital in sub-Saharan Africa

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**Author’s response to reviews:**

The Editor,

BMC Musculoskeletal Disorders

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Dear Editor,

Re: Re-submission of manuscript “Factors influencing disability in patients with chronic low back pain attending a tertiary hospital in sub-Saharan Africa” - BMSD-D-18-00393

We are pleased to resubmit our above-mentioned manuscript to your journal for consideration. We express our appreciation for the reviewers’ comments and yours as these have led to an improvement in the quality of our manuscript.
All changes requested by the reviewers have been highlighted in yellow in the manuscript, while we present below, a point-by-point response to each of the queries.

We are committed to improving the quality of the manuscript further and hope you will find this revised version suitable for publication.

Sincerely,

On behalf of all authors.

Reviewer reports:

Reviewer #1

Comments

1. The manuscript entitled "Factors influencing disability in patients with chronic low back pain attending a tertiary hospital in sub-Saharan Africa" conducted a hospital-based cross-sectional study on the disability of chronic back pain patients in Cameroon. The manuscript is well written….

Response: Thank you for the kind appreciation.

2. At first, the number of pages should be written at the bottom of each page.

Response: Numbering has been inserted at the bottom of each page.

3. The authors should describe the total number of patients who visit the Rheumatology unit of your hospital during the observation period.

Response: Thank you for this important suggestion. We have included in the section study design and setting, Page 5, line 10-14, it reads;

“Three rheumatologists (who actually made or confirmed the diagnoses for patients in the study) are responsible for this unit. The unit runs outpatient consultations from Monday to
Friday. Each rheumatologist has two consultation days, with an average of 1 or 2 rheumatologists consulting daily. Each rheumatologist consults approximately 15-30 patients a day, 20-40% of which are low back pain patients presenting either de novo or for follow-up visits.”

4. In addition, all the diagnosis of the patients who visited the observation period and the number of patients of each diagnosis should be written.

Response: Thank you for this important suggestion. We have included in the ‘background’ a note defining some basic diagnostic terminology. Page 3, line 13-19 reads;

“Interestingly, though a frequent cause of clinic visits, the specific aetiology of the pain in LBP is often not identified; in which case it is referred to as “non-specific LBP”. Therefore, the first aim of the clinical evaluation is usually to situate the patient in one of three categories; non-specific low back pain, back pain with radiculopathy or stenosis, and back pain associated with another specific spinal cause [7]”

We equally included in the Results, page 8 lines 20-23, the principal diagnoses for our study population, which is further, expatiated in a new figure. The corresponding text reads;

“Forty-one percent of participants had non-specific CLBP, 56 % CLBP with radiculopathy/stenosis, and 3% had CLBP from a specific spinal cause. The principal specific aetiologies encountered in participants are described in Figure 1.”

5. The diagnosis criteria of low back pain (LBP) should be written in detail (for example, patients complain, area of pain, radiographic findings, etc.).

Response: Thank you for this important suggestion. We have included in ‘sampling and study participants’ page 5 line 19-21, the operational definition of LBP that was employed in the study which reads;

“LBP was defined as: sensations of pain, muscle tension, or stiffness, localized below the costal margin and above the inferior gluteal folds. The area involved identified on a human diagram.”

6. The specialty of doctors who diagnosed the low back pain should be written.

Response: Thank you for this important suggestion. The diagnoses were made or confirmed principally by the three rheumatologists working in the unit where the study was conducted. We
have included in study design and setting, page 5 line 10 a phrase that addresses this as seen below:

“Three rheumatologists (who actually made or confirmed the diagnoses for patients in the study) are responsible for this unit.”

7. Table 1, 2 and 4 are complicated and difficult to see the data. The table should be modified to be simpler.

Response: Thank you for this important suggestion. Modifications have been brought to table 1, 2, 4 via an additional column to make it simpler and more intelligible.

Reviewer #2

Comments

1. The paper entitled "Factors influencing disability in patients with chronic low back pain attending a tertiary hospital in sub-Saharan Africa" is targeting one of the most common worldwide health problem. It is important contribution to fill the gaps in exploring the disability among CLBP around the world.

Response: We thank you for the appreciative remarks.

2. Are given variables really predictors or can be consequence/accompanying factor of CLBP, which is actually the cause for disability?

Response: Thank you for this comment. We agree with the reviewer and acknowledge in our literature review that CLBP is the “actual” cause of disability (page 3, line 18 to page 4, line 1). We equally acknowledge that many of the variables we studied are possibly consequences/accompanying factors of CLBP; see page 4, line 24-29. However, we seek to investigate how much these factors influence the relationship between CLBP and disability in our setting, which has not been explored. This could help guide physicians in our setting on which factors to consider targeting (for example managing anxiety in these patients) while managing these patients in order to improve functional status.
3. What about functional tests and strength of core muscles. Literature provides strong evidences, that weak core muscles are the main risk factor for CLBP.

According to that, authors should thoroughly review the literature base and improve readability.

Response: Thank you for the suggestion. In page 4, line 4-7 we comment on functional status testing in LBP and acknowledge its superiority in terms of objectively evaluating physical impairment in these patients. In addition, though our focus was not the risk factors for developing LBP, but rather “factors associated” with disability in LBP, we have searched the literature as the reviewer prompted and have included some notes in the literature on the role of core muscles in LBP and disability. It reads;

“Core muscle dysfunction is believed to be a major trigger for low back pain [23, 24]. These muscles are responsible for maintaining spine stability and counteracting external forces. Weakness results in instability and strain on the vertebral column and intervertebral discs [23]. Core muscle weakness has equally been associated with more severe pain and greater disability in LBP patients [24, 25].”

4. There are several mismatching between tables and figures listed in body of the article and the one attached (e.g. numbers of tables and figures).

Response: Thank you for bringing this to our attention. We have cross checked and corrected all errors of this kind.

5. Page 5, Line 53: This study further showed…. Is this really what this study showed or is just a summary of literature?

Response: To prevent ambiguity in comprehension, we have deleted the terms ‘further showed’ and replaced with ‘reported’. It reads;

“This study reported that lower back and neck pain grouped, constituted the leading cause of disability in all high-income countries, and in almost all Latin American, Asian, and Middle Eastern countries.”

6. Page 6, Line 58: ….impaired psychological wellbeing… all of which can be direct consequences of LBP. Psychological wellbeing is known also as a strong risk factor for CLBP. Statement should be rewritten.
Response: Thank you for this remark. The statement has been rephrased (page 4, line 24-29) and now reads;

“Like core muscle dysfunction, impaired psychological wellbeing and impaired sleep quality are recognised risk factors of LBP (and possibly also consequences of the pain), while equally prolonging disability in these patients [26–28]. Fear of movement from fear of the pain or reinjury results in muscle disuse and structural changes that worsen and prolong disability in LBP [27, 29, 30]. More so, leg pain, back tenderness, lack of exercise and advancing age have equally been associated with greater disability in LBP [30, 31]”

7. Page 8, Line 6-7: … worker, housewife, student, non-worker or retired… Nouns should be the same as are further used in tables.

Response: Thank you for bringing this to our attention. We have corrected in “study procedures and data collection”, by changing “worker, housewife, student, non-worker or retired” to “employed, housewife, student, unemployed or retired” for consistency (page 5, line 2.

8. Page 8, Line 10-11: … alcohol consumption (consumer or non-consumer)… What was the definition used state who is consumer and non-consumer.

Response: Thank you for the comment. We have added definitions in study procedures and data collection. See page 6, line 2-4, which reads:

“An alcohol consumer was considered to be a study participant who admitted to consuming at least one alcoholic drink in the month preceding the interview.”

9. Page 9, Line 47: … satisfaction with their sleep in the past month on a scale of 1 to 5. What is 1 and what is 5?

Response: Thank you for the comment. We have clarified in study procedures and data collection, page 7, line 10-11), it reads:

“1 representing “very dissatisfied and 5 representing very satisfied”

10. Page 9, Line 52: Patients' weight and height were measured using standard procedures... Which standard procedure - references and which weight scale was used - model?
Response: Thank you for the comment. We have clarified in study procedures and data collection section of the methods. This reads;

“This was done with participant wearing light clothing and without shoes, their weight was measured using Seca® scales while height was measured with the adult Leicester® stadiometer. The stadiometers were placed against the wall, while participants stood upright without their shoes and their heels and occiput on the stadiometer. For height, measures were to the nearest 0.5 cm while for weight we considered one decimal place.”

11. Page 10, Line 2: … number of days of restricted routine activity... How restricted routine was defined?

Response: Thank you for the comment. We have elaborated further (page7, line 20) as you may read below:

“Work absence due to LBP was denoted “days of work loss” and defined as the number of days of restricted routine activity (inability to carry out your regular activities) or absence at workplace because of CLBP occurring within the 30 days preceding the interview.”

12. Page 11, Line 4, 5: Multicollinearity should be checked for the variables included in the multivariable linear regression model.

Response: Thank you for the important suggestion. We did check for multicollinearity but missed explicitly mentioning it. We have now elaborated on this in the data management and statistical analysis section, which reads;

“Prior to fitting the multivariable model, we checked for evidence of multicollinearity in the independent variables via a correlation matrix and then ran collinearity diagnostics to assess their tolerance and variance inflation factors (VIF). All VIFs were less than 2, suggesting absence of any multicollinearity. Statistical significance was set at p < 0.05.”

13. Page 11, Line 44: Average work lost days… Not in table 2 as referred.

Response: Thank you for bringing this to our attention. We have corrected this.

14. Page 12, Line 1, 2: Data and referral to tables mismatch.
Response: Thank you for bringing this to our attention. We have corrected this in the results section by adding the table number (page 9, line 4) and changing the figure number from 5 to 6 (page 9, line 9).

15. Page 12, Line 17: … RMDQ scores when compared with counterparts without. Add referral to table on the end of the sentence.
Response: Thank you for the suggestion. This has been done. See page 9, line 15.

16. Page 12, Line 19-21: Alcohol consumption (Figure 1) and sphincter dysfunction (Figure 2) had the greatest impact on the RMDQ. Are data significant or not?
Response: Thank you for the suggestion. The significance level has been added at the end of the statement, page 9, line 17.

17. Page 12, Line 46, 47 and Page 13, Line 3,4: … four out of five CLBP patients had significant disability. Explain, 4 out of 5 is 80%.
Response: Thank you for the suggestion. The statement was rephrased “four out of five” changed to “more than 80%”. This now reads;
“In this hospital-based study, we found that more than 80% of CLBP patients had significant disability.”

18. Page 12, Line 54-59: Independent predictors of disability in our cohort of CLBP patients were present pain, days of work absence, psychological wellbeing, alcohol consumption and BBDS. Multicollinearity of these factors should be evaluated and stated.
Response: Thank you for this important remark. We did check for multicollinearity among the independent variables that were included in our multivariable model using a correlation matrix and ran collinearity diagnostics to check the tolerance and variance inflation factors (VIF). We found no evidence for multicollinearity, as all VIF were less than 2. As suggested, this has now been stated in the data analysis section of the manuscript, which reads:
“Prior to fitting the multivariable model, we checked for evidence of multicollinearity in the independent variables via a correlation matrix and then ran collinearity diagnostics to assess their tolerance and variance inflation factors (VIF). All VIFs were less than 2, suggesting absence of any multicollinearity. Statistical significance was set at p < 0.05.”
19. Page 14, Line 7: While some studies report only a weak association [21] … Just one study is listed. Review the literature.

Response: Thank you for this important remark. The literature was reread and the statement revised (page 10, line 29).

20. References: revise according to guidelines of the journal.

Response: Thank you for this important remark. The references have been reorganized as per journal guidelines.