Author's response to reviews

Title: Assessing the Effects of an Educational Program for the Prevention of Work-related Musculoskeletal Disorders among School Teachers.

Authors:

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Version: 3  
Date: 4 September 2014

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

We wish to thank the reviewers and editors for their constructive criticism and suggestions concerning our submission to BMC Public Health (Manuscript ID:1413395540132422). According to the criticisms and suggestions, we have carefully revised the manuscript according to the point-by-point responses below and highlighted the revision in the text in yellow.

EDITORS COMMENTS:

Please consider that all referees recommended a general language improvement. Furthermore several important statements across the paper are not backed by adequate references.

Response: We have used a native English speaker to review our manuscript.

In addition to the comments suggested by the reviewers I would ask you also to include a brief presentation of the correspondence analysis in the methods section. Indeed there is no mention at all in the methods, and Figures 2 are presented out of the blue in the results. Since it is a relatively uncommon statistical procedure it would be beneficial to have some description/explanation on what it is and how it should be interpreted by the average reader.

Response: For factor loading plot of Correspondence Analysis, we observed the horizontal distance of two points (the group and the answer). The nearer distance between two points, the more close the relationship between them. The sentence has been improved on (Methods) Page 8, Line 161-164: “For the factor loading plot of
Correspondence Analysis, we need to observe the horizontal distance of two points (the group and the answer). The nearer distance between two points, the more closely relationship between them.”

Furthermore, as mentioned by the referees, caution needs to be observed in commenting the results of the present work. This is just an observational study hence no causation shall be considered. This study is neither experimental nor even quasi-experimental: it is a before - after study. There should be a comment about the study limitation in discussion.

Response: We agree that there were problems with the original text. The sentence has been improved on Page 14, Line 289-303: “Schools vary by scale, degree, nature, and teaching content. Randomization of small numbers of clusters (schools) may not adequately deal with potential confounding factors (e.g. contamination in the workplace). Although the education of teachers is higher, it is still difficult to avoid some information bias. Recall bias of the participant impedes our ability to compare post-intervention knowledge to baseline (pre-intervention), as well as our ability to assess the effect of the intervention. However, this study lacks in-depth research on the effect of intervention on intermission times and exercise, and this is just an observational study. Our study was pre/post designed without a control group so that both confounding and contamination could not be adequately examined. Despite this, there are potential applications of this intervention model for teachers in other countries, and the intervention can also be modified to be implemented in schools for prevention and control of WMSDs. With the development of WMSD-related studies,
we need new evaluation methods to evaluate the WMSDs [37-41]. Further high quality studies, preferably longitudinal, are needed to support evidence-based ergonomic interventions in practice [36, 42, 43]."

Reviewer's report

Title: Evaluation on Intervention Effects of Work-related Musculoskeletal Disorders among School Teachers

Version: 2 Date: 1 July 2014

Reviewer: Stefano Candura

Reviewer's report:

Major compulsory revisions

1. The study describes an articulated educational intervention on work-related musculoskeletal disorders among Chinese school teachers. The results indicate beneficial preventive effects. The paper appears interesting and worth publishing, however an accurate linguistic revision is needed.

Response: We apologize for the language errors and the structure of the presentation, and have had a native English speaker review our manuscript. In addition, we have revised the manuscript and highlighted the revisions in the text using yellow.

2: The title of the article should be better formulated, e.g. "Effects of an educational
program for the prevention of work-related musculoskeletal disorders among school teachers”.

Response: We have re-titled our manuscript as “Assessing the Effects of an educational program for the prevention of work-related musculoskeletal disorders among school teachers”.

Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

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

Reviewer's report

Title: Evaluation on Intervention Effects of Work-related Musculoskeletal Disorders among School Teachers

Version: 2 Date: 28 July 2014

Reviewer: Johannes R Anema

Reviewer's report:

Major Compulsory Revisions Abstract

1. The authors mention this study as being a self-controlled study. However, as the authors later discuss themselves, no control group was used in this study. Pre- and post-measurements were performed in a longitudinal setting. Thus, the design of this
study is not a self-controlled design.

Response: As stated, this study is neither experimental nor even quasi-experimental: it is a before - after study. The control is itself. Therefore, we refer to this study as a self-controlled study.

Methods

2. This article reports merely on descriptive statistics, and does not address exposure effects of the intervention. Based on the described methods, it is impossible to make conclusions regarding the effectiveness of this strategy. There are some issues the authors should address, including:

• Which statistical analyses were applied to assess the effects?

Response: The chi-square test was applied to compare the proportions of teachers. Group comparisons were performed to examine the changes between pre-intervention, six months post-intervention and 12 months post-intervention. A factor loading plot of Correspondence Analysis was fitted using the R package MASS (version 7.3-31). Through these analyses, we can clearly distinguish the changes in teacher cognition, attitude, behavior and the prevalence of work-related musculoskeletal disorders.

• Why was no control group used?

Response: This study is neither experimental nor even quasi-experimental: it is a before - after study.

• Which groups were compared in the analyses (as described in this article)?

Response: We contrasted the before and after itself (pre-intervention, six months
post-intervention, 12 months post-intervention).

- How many teachers actually received the intervention?
  
  Response: First we chose 500 eligible teachers, but only 350 teachers actually responded, so 350 teachers actually received the intervention. Our subsequent follow-up is also the group. The detailed process is now shown in Figure 1.

- Why was no exposure effect measured between teachers receiving the intervention and teachers not receiving the intervention?
  
  Response: This is a limitation on our study. Actually our study is neither experimental nor even quasi-experimental: it is a before - after study. This study is an observational study.

- Were any confounders and/or effect modifiers taken into account?
  
  Response: Yes. We adopted the Fisher’s exact test to adjust the result of chi-square test.

- Why did the authors rely on merely self-reported data? As the authors describe, sick leave and absenteeism (among others) are important in WSMDs in school teachers. Why were no objective measures taken to assess sick leave and absenteeism?
  
  Response: This is a limitation on our study. However, most peer studies still rely on self-reported data.

Discussion

3. The authors should discuss their results, and the strengths and limitations of their
study in more detail. Also, it should be made clear how these results relate to existing knowledge.

Response: We have improved and expanded the text replacing this paragraph begins on line 216, page 10 of the discussion.

Conclusion

4. The authors conclude that they demonstrated the effectiveness of their intervention program. However, due to the design and statistics performed, this conclusion cannot be drawn from this study.

Response: We agree there are some problems in the design. However, there is no similar study in China at present. Our study shows education intervention can obtain a beneficial effect. Of course, further improvement of the design of the study is needed in order to obtain a scientific and precise conclusion in the future.

Minor Essential Revisions General

5. We advise that the authors consult a (native) English speaker regarding spelling and use of terms.

Response: We have consulted a native English speaker.

6. Figures were missing correct labeling/titles.

Response: We followed the suggestions.

Methods
7. **Authors should describe the selection and recruitment of participants more clearly.**

Response: We followed the suggestions on Page 4-5, Line 82-97: “We adopted the method of random cluster sampling, randomly select four schools for cluster sampling from out of the 1055 schools in Shantou. Simple randomization was conducted by assigning a computer generated numeric code (from 1 to 1055) to each school, and then the first four schools were selected. Two primary schools, one junior middle school, and one senior middle school were selected. Five hundred teachers were randomly recruited from schools in Shantou City, Guangdong Province on June 20, 2010 and this study stop to August 21, 2011. Teachers from each school were selected as participants using the following inclusion criteria: front-line teachers (directly facing the students and teaching in class every day) and being employed in the current school for at least 12 months. The exclusion criteria included employees in the administration, design and logistics; temporary teachers, and teachers who taught for less than 1 year. Teachers meeting the inclusion criteria were identified by the management of each school and invited to participate in the study. The participants signed an informed consent form and the study procedures were approved by the Ministry of Education in the districts where the schools were located. Each participant received a gift for participation in the study.”

8. **The authors mention follow-up rates for 6 and 12 month post-measurement interventions.** Their 6-month follow up rate is expressed as a percentage of the initial number of subjects included. However, their 12-month follow up rate is expressed as
a percentage of the subjects remaining at 6 month follow-up. This is unusual and
confusing; 12-month rate should also be expressed as a percentage of the initial
number of subjects that were included (i.e. 350 teachers).

Response: We have made the changes (Page 2, Line 36 and Page 7, Line 132):
“90.9% (319/350)”.

9. The process of validating the questionnaire is not entirely clear and should be
described in more detail. This is important in assessing the quality of the results.

Response: We made the suggested revisions (Page 6, Line 113-114): “The test–retest
reliability of the questionnaire was conducted to demonstrate that the questionnaires
were reliable (Kappa 0.83).”

10. It is unclear who provided the occupational health education lectures and de
on-site ergonomics training. This is important information when assessing the quality
of the provided intervention.

Response: We now state an experienced epidemiologist provided the occupational
health education lectures and on-site ergonomics training (Page 7, Line 151).

11. It is not described how the 12-month follow-up measurement was performed.

Response: We make the description on Page 7, Line 131-132. Figure 1 provides a
visual description.

Background

12. Authors describe the following goal of the study: “Our goal is to present
evidence-based prevention strategies for school teachers that will assist in ultimately reducing these potentially career-threatening injuries.” This description implies that the article will give an overview of prevention strategies. However, it describes merely one intervention strategy, designed for this particular study. It would be good if the authors could describe more strategies using literature. Also, the authors might consider formulating their goal in a different way that suits the content and design of their study better.

Response: We made the suggested revisions (Page 4, Line 75-77): “Our goal is to present evidence-based intervention strategies for school teachers that will assist in ultimately reducing these potentially career-threatening injuries.” Your suggestion is very useful to us, we will consider it in subsequent study.

Results

13. Authors describe the results referring to the question numbers used in their questionnaire. This is uncommon and inconvenient for the reader. Rather, the authors should describe their results more clearly and refrain from referring to question numbers.

Response: We followed the suggestions. The sentence has been improved (Page 8-10, Line 172-190, 196-201, 202-203): “The frequency of correct answers of “What kind of disease is a WMSD?”, “Can WMSDs be prevented or controlled?”, “Do you know how to adjust the height of the office chair to make yourself more comfortable?”, “Should you not leave space, when working in a sitting position, between the seat
front and back of your legs?”, “If you have neck symptoms, you had better raise the
pillow to sleep.”, “Is the optimal chair height up to the position of knee?”
monotonically increased (P<0.05), indicate that awareness rate of WMSDs related
knowledge have improved, the effect is sustaining. The frequency of correct answers
of “Do you know about physiological bending of the spine?”, “Do you know the
correct posture for working at your desk?”, “What is the optimal elbow angle for
typing at a computer?” took a marked departure from monotonicity, with a sharp
downward turn at 12 months post-intervention (P<0.01). That awareness of
WMSD-related knowledge increased in six months post-intervention, and declined in
12 months post-intervention, indicates that intervention in “physiological bending of
the spine”, “correct posture for working at your desk”, “optimal elbow angle for
typing at a computer” has a short-term effect. However, the frequency of correct
answers for “Do you know the correct posture to use at the computer?” and “What is
the optimal angle between monitor and your sight line when using a computer?” are
close to non-monotonic between six and 12 months post-intervention, showing that
there is no significance before and after intervention (P>0.05).”, “The factor loading
plot of Correspondence Analysis indicates intervention is effective in “What do you
think, is it necessary to launch the disease knowledge lectures and training activities?”,
“What do you think the optimal way to acquire prevention and control knowledge of
disease is?”, “Would you pay special attention to keeping the optimal posture at
work?”, “Would you ever do some extra stretching exercises during work?” (Figure
2). Assessments of the positive effects “How long do you think the positive effects of
the occupational health education lectures and ergonomics training can last?”, at six and 12 months after intervention, were identical, showing that the behavior and attitude for prevention of the disease not only improved, but also persisted unabated for at least 12 months (Table 2).”

14. It would be good if authors presented their main results in one overall and easy accessible/readable table.
Response: Table 1 now shows the results of cognitive changes, and Table 2 shows the results of changes in attitude and behavior. The tables have been adjusted.

15. The authors could consider a title that suites the content of the study and this article better, and that makes clear the population of this study was limited to a province in China.
Response: We have re-titled the manuscript to “Assessing the Effects of an educational program for the prevention of work-related musculoskeletal disorders among school teachers”.

16. It would be good if the authors considered adding extra literature references, clarifying for example the quantity of the MSD problem, and why school teachers are at higher risk for developing MSDs. Also, some points miss literature reference, for example referring to the work of Santos et al. (Background, 1st paragraph, line 67).
Response: We followed the suggestions on Page 3-4, Line 50, 52, 54, 55, 57, 63, 67, 73. References have been added ([1], [2-5], [6,7], [3,4,8-10], [16,17], [1,5,10,12,14], [1,5,10,11,13-17]).

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
Both reviewers declare that they have no competing interests.

Reviewer's report

Title: Evaluation on Intervention Effects of Work-related Musculoskeletal Disorders among School Teachers

Version:2 Date: 14 July 2014

Reviewer: Sjan-Mari van Niekerk

Reviewer's report:

This is a good attempt at an ergonomics intervention to prevent WMSD’s amongst teachers in China. Intervention studies are few and very needed in this field.

Unfortunately the methodology of this study lacks information in regards to how and which type of pain data was collected and the effect of recall bias. This makes the
interpretation of the results very difficult. The discussion lacks depth and understanding, which might sprout out of the gaps in the methodology.

Response: This is a limitation on our study. However, most peer studies still rely on self-reported data. Therefore, we cannot get the requested information in regard to which type of pain. Because of this, we also cannot avoid the recall bias. According to the comments we have revised the manuscript and highlighted the revision in the text using yellow color.

Major Compulsory Revisions Title

Reword:

Assessing the effects of an ergonomics intervention on work-related musculoskeletal disorders among Chinese school teachers.

Response: We have re-titled the paper to “Assessing the Effects of an educational program for the prevention of work-related musculoskeletal disorders among school teachers”.

Background

Specifically mention the prevalence study as well as the result of the study by Yue et al. (2012) as well as Chong et al. (2010) and say that it was done in China. This will set the scene for the current intervention study, which is in the same population.

Response: Study of Yue et al. (2012) and Chong et al. (2010) are now mentioned the prevalence of WMSDs. The areas of Yue et al. and Chong et al. are mentioned as being done in Puning, Guangdong province and Hong Kong, respectively.
Line 49 – 57: Need references for all the statements in the first paragraph.

Response: We now cite the references.

Line 62-63: Reference “Furthermore, musculoskeletal disorders are also one reason…”

Response: We have revised the manuscript on Page 3, Line 62-63 [16,17].

Line 63-64: Reference “Musculoskeletal complaints, especially of the lower back, neck and shoulders…”

Response: We followed the suggestions on Page 4, Line 67. The reference has been added [1,5,10,12,14].

Line 68: Change to “program aimed at the prevention of WMSDs was comparable…”

Response: The sentence has been changed (Page 4, Line 70).

Line 70: Provide the references for the “large published literature”.

Response: We now cite the references (Page 4, Line 73 [1,5,10,11,13-17]).

Line 72: Change to “While there is a large published literature in relation to teachers and WMSDs going back 10 years or more, little has been published on the prevalence of WMSDs, including intervention studies, aimed at the teacher population of China.”

Response: The sentence has been improved (Page 4, Line 74-75).

Methods

Line 79: Rephrase “Five hundred teachers were randomly recruited from schools in Shantou City, Guangdong Province between June…”

Response: The sentence has been changed according to the suggestion (Page 4-5, Line
Five hundred teachers were randomly recruited from schools in Shantou City, Guangdong Province on June 20, 2010 and this study stop to August 21, 2011.”

How was the school selected? Is this the only school in the area?

Response: We adopted a random cluster sampling method in which four schools were randomly selected from 1055 schools in Shantou. Simple randomization was conducted by assigning a computer generated numeric code (from 1 to 1055) to each school and then the first four schools were selected. Two primary schools, one junior middle school, and one senior middle school were included. The sentence has been improved (Page 4, Line 82-87). The previous sentence “Teachers were from two primary schools, one junior middle school, and one senior middle school has been deleted.

Line 82: what are “frontline teachers”?

Response: Front-line teachers are directly facing the students and teaching in class every day. The sentence has been improved (Page 5, Line 90-91).

Example of the questions included in the modified questionnaire needs to be added in table form for clarity. How did it differ from the DMQ and the NMQ? Why not just use one of these standardized questionnaires?

Response: the NMQ is the most classic outcome measure for musculoskeletal disorders (MSDs). It has been commonly used in epidemiological studies of work-related musculoskeletal disorders, and can be easily used to compare findings between studies. But it only asks for information about MSDs, it does not involve risk
factors. The DMQ includes information on MSDs, and also asks the relevant risk factors. So, the questions used to assess the factors related to an increased risk for WMSDs were derived from the standardized DMQ.

How was the effect of the intervention measured? Was a scaled used, if so, which one?

Response: The chi-square test was applied to compare the proportions of teachers. Group comparisons were performed to examine the changes between pre-intervention, six months post-intervention and 12 months post-intervention. A factor loading plot of Correspondence Analysis was fitted using the R package MASS (version 7.3-31). Through these analyses, we clearly distinguished the changes of teacher cognition, attitude, and behavior, and the prevalence of work-related musculoskeletal disorders.

Line 103: “thirty teachers from another school…” was this part of the previous prevalence study? Please clarify in the text. Provide an ICC or CMC value for the test–retest reliability and inter-rater agreement, as well as the specificity and sensitivity of the content validity of the questionnaire.

Response: We have made the changes (Page 6, Line 113-114). The test–retest reliability of the questionnaire was conducted to demonstrate that the questionnaires were reliable (Kappa 0.83).

Interventions
Line 129: Rephrase: “The multifaceted intervention comprised of two aspects:…”

Response: The sentence has been changed (Page 7, Line 137).

Was the intensity, severity and duration of the pain measured and taken into account?

Response: The questions on musculoskeletal symptoms were assessed according to the Nordic Musculoskeletal Questionnaire (NMQ) and were accompanied by anatomical diagrams depicting the specified sites. We did not separately collect information on intensity, severity and duration of pain.

What is the recall period for pain? Was it pain at the time of the data collection? Or during the past 6 months? Or 12 months? This is not clear?

Response: The questions on musculoskeletal symptoms were assessed according to the Nordic Musculoskeletal Questionnaire (NMQ) and were accompanied by anatomical diagrams depicting the specified sites. The recall period for pain was during the 12 months following intervention.

Provide the specific recommendations that were given in regards to changing the workstation?

Response: This is a critical suggestion. The multifaceted intervention comprised of two aspects: 1) an occupational health lecture, 2) ergonomic training on how to improve their posture while working on the computer, including recommendations on how to minimize strain on forearms, upper back and neck by adjusting angles and
work posture, and practical instructions on how to modify their workstation by changing chair and desk height, backrest inclination, keyboard inclination and location, screen height, inclination and orientation, forearm supports and foot rests as needed. In addition, poster foldouts were printed and distributed to teachers. This has now been incorporated into the manuscript.

What did the ergonomics training entail? Were physical modifications made to the workstations, either by the investigator or the participant? Was this recorded? Did the modification influence the symptoms?

Response: ergonomic training on how to improve posture while working on the computer included recommendations on how to minimize strain on forearms, upper back and neck by adjusting angles and work posture, and practical instruction on how to modify their workstation by changing chair and desk height, backrest inclination, keyboard inclination and location, screen height, inclination and orientation, forearm supports and foot rests as needed. According to peer studies, workstation modification was performed by changing chair and desk height, backrest inclination, keyboard inclination and location, screen height, inclination and orientation, forearm supports and foot rests can improve the symptoms (Robertson MM, et al.: Office ergonomics training and a sit-stand workstation: Effects on musculoskeletal and visual symptoms and performance of office workers. Appl Ergon 2013).

What took 8 weeks? Were there weekly sessions? Thus 8 sessions per school? What
did each session comprise of? Were there individual sessions to change workstations?

Response: The lecture and ergonomics training were launched as weekly sessions at each school. The lecture and ergonomics training took eight weeks for each school by an experienced epidemiologist. We now state this clearly (Page 7, Line 151-152).

Results

Include a table on the demographics of the sample (gender, age, prevalence and severity of pain).

Response: Our study is a longitudinal observational study. The observation period was from June 20, 2010 to August 21, 2011. Therefore, gender and age were not included. Prevalence is shown in Table 3. We did not separately collect information on the severity of the pain.

Table 1: It would be useful to include the questionnaire on which Table 1 is based, in the methods sections so that the answers or options can be seen. The table contents needs to be edited by a native English speaking editor.

Response: The questions of Table 1 are visual. The answer of questions are multiple. Therefore, we analyzed the difference of correct and incorrect answers before and after intervention. We agree that there were problems with the table contents and have followed the reviewer’s suggestions.

Table 2: This table does not provide enough information on the effect of the
intervention. Were there any new cases of pain reported? Was there a decrease in the intensity/severity of pain between the baseline and 6 months and 12 months post intervention. Or do the results indicate that for instance, somebody had neck pain (of any degree) at baseline and then no pain at 6 months post intervention? What if that person then developed neck pain again during the next six months? Was the number of incidences of pain recorded and taken into account?

Response: The recall period for pain was within the 12 months following intervention. We did not separately collect information on the intensity/severity of the pain. The questionnaire was self-administered and prevalence of pain was recorded. We lack the incidence data, this is a limitation on our study.

Discussion

The discussion is poorly written and needs substantial editing.

The understanding and interpretation of the results is weak. This section requires a rewrite, which include justification of the results.

Response: We have improved and expanded the text of the discussion.

Line 195: Provide reference “Compared with the developed countries, Chinese teachers occupy a larger proportion of occupational..”

Response: We have revised the sentence (Page 11, Line 221-224).

Line 197: Edited so that sentence does not start with Because…

Response: We have revised the sentence (Page 11, Line 224).
The meaning of this sentence if not clear..

Response: The sentence has been improved (Page 11, Line 228-230).

The section on Behavioral and attitude changes does not make sense. There is reference to other studies, but it’s not coherent. The relevance to the current study results is not obvious. Many statements are made without reference.

Response: We have improved and expanded the text of the discussion (Page 12-13, Line254-274).

What does Annual prevalence refer to? Is that pain experienced during the entire year? There is no validity in pain recall over an entire year. Also, when the pain questionnaire was administered at 12 months post intervention, did it refer to pain during the entire year, or just the 6 months post the previous measurement which happened at 6 months post intervention? This does not make sense and does not provide useful information. If you answered yes, to neck pain, which was experienced at the beginning of the data collection period (thus before the first 6 months questionnaire), would you then answer yes to experiencing neck pain at both the 6 months follow-up and the 12 month follow-up? The procedure is unclear.

Response: The questions on musculoskeletal symptoms were assessed according to the Nordic Musculoskeletal Questionnaire (NMQ) and were accompanied by anatomical diagrams depicting the specified sites. Teachers answering “yes” indicates they experienced pain. According to peer studies, the period of annual prevalence...
were using during the past 12 months. The questionnaire was self-administered and prevalence of pain was recorded. We lack the incidence data, this is a limitation on our study. We agree that there were problems with the original text. We rephrased “annual prevalence change” to “prevalence change within the 12 months following intervention” (Page 13, Line 275-283).

This section does not make sense “A one-year study showed that there were significance changes in lower extremities, wrist and finger in manufacturing workers after training [27]. Difference from our study is characteristics of career. “ What was different, what is the significance of this? What are the possible reasons for the difference? Response: Because of the different work characteristics, conditions and working strength, multiple parts of WMSDs are also different [3,4,8-10]. Musculoskeletal complaints, especially of the lower back, neck and shoulders, are also common among teachers due to prolonged desk work, standing, prolonged sitting, and working on a computer. Musculoskeletal complaints, such as ankle/foot and wrist/hand, are common among manufacturing workers due to operating the machine through the use of lower extremities, wrist and fingers. The sentence has been improved (Page 13-14, Line 284-289).

Conclusion

There is no mention of improving the work efficiency in teachers in the aim or
The intervention method of this study, but yet it is concluded that the current intervention achieved this.

Response: We agree that there were problems with the original text. The sentence has been changed (Page 15, Line 307-308): “We demonstrate the effectiveness of a multifaceted ergonomic intervention program designed to reduce musculoskeletal symptoms in teachers.”

Minor Essential revisions

All numbers below 10 should be written out.

Response: The sentence has been improved in the text.

**Level of interest:** An article of importance in its field

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Reviewer's report**

**Title:** Evaluation on Intervention Effects of Work-related Musculoskeletal Disorders among School Teachers

**Version:** 2 **Date:** 12 July 2014

**Reviewer:** Magdy A. Darwish

**Reviewer's report:**

Major compulsory revisions and minor ones are detailed in the attachment.
Response: According to the comments we have revised the manuscript and highlighted the revision in the text using yellow color. The revisions was excerpted in the following:

Abstract

Background:

Line 23: Rephrase “expensive” - “costly”

Response: The sentence has been improved, as follow: Page 2, Line23.

Line 25: Rephrase “to improve”-“on”

Response: The sentence has been improved using the reviewer’s suggestions (Page 2, Line 25).

Methods:

Line 30: Rephrase “was”-“were”

Response: The sentence has been changed (Page 2, Line 30).

Line 33: Omit “after”

Response: The sentence has been using the reviewer’s suggestions (Page 2, Line 34).

Results:

Line 36: Add “and”

Response: The sentence has been changed (Page 2, Line 36).

Conclusion:

Line 41: Rephrase “have”- “showed”

Response: The sentence has been changed (Page 2, Line 41).
Background:

Line 49: Rephrase “expensive” - “costly”

Response: The sentence has been changed (Page 3, Line 49).

Line 51: Rephrase “WMSDs (work-related musculoskeletal disorders, WMSDs)”-“work-related musculoskeletal disorders, (WMSDs)”

Response: The sentence has been changed (Page 3, Line 51)

Line 53-57: Reference “The prevalence of WMSDs…”

Response: We agree that there was a problem with the original text. The sentence has been rephrased from “occupational skin diseases” to “occupational mental diseases”. The reference has been added (Page 3, Line 53-57).

Line 62-63: Reference “Furthermore, musculoskeletal are …”

Response: The reference has been added (Page 3, Line 63).

Line 65: “sedentary”what?

Response: We agree that there were problems with the original text. The sentence has been changed (Page 4, Line 65-67).

Line 67-70: “According to Santos et al…” is this relevant to your study if they are comparable, why specific program is needed?

Response: The specific program was aimed at preventing WMSDs. The comparison is “general health orientation for the improvement of the quality of life and work capacity”. The sentence emphasizes that a specific educational program aimed at the preventing of WMSDs is available.
Methods:

how schools were selected - why these 4 schools

Response: We adopted a random cluster sampling method where by four schools were randomly selected from 1055 schools in Shantou. Simple randomization was conducted by assigning a computer generated numeric code (from 1 to 1055) to each school and then the first four schools were selected. Two primary schools, one junior middle school, and one senior middle school were selected. The sentence has been modified (Page 4, Line 82-86). The previous sentence “Teachers were from two primary schools, one junior middle school, and one senior middle school has been deleted.

how teachers were selected - how management selected those to participate

Response: First we chose 500 eligible teachers, but only 350 teachers actually responded, so 350 teachers actually received the intervention. Our subsequent follow-up was also on the same group. The detailed process is referred to in Figure 1.

Line 90: “Each participant received a gift for participation in the study.” is it ethically accepted

Response: This research was approved by the Ethics Committee of the Medical College of Shantou University (Page 4, Line 81).

Line 102: “Content validity index and inter-rater agreement…”did you use the same questionnaire?

Response: Yes, we used the same questionnaire.

Line 106: “test-retest reliability was determined to be reliable” how reliability was
Response: We followed the suggestions on Page 6, Line 113-114. The test–retest reliability of the questionnaire was conducted to demonstrate that the questionnaires were reliable (Kappa 0.83).

Line 129: Rephrase “was comprised”-“consisted”
Response: The sentence has been changed (Page 7, Line 137): “The multifaceted intervention comprised of two aspects:”

Discussion:
all result section was repeated in discussion section - repetitions should be minimized.
again - there is no literature on similar research to compare results
Response: An improved and expanded text replacing this paragraph begins on line 217, page 10 of the discussion.

Line 198: Rephrase “is”-“are”
Response: The sentence has been changed (Page 11, Line 225).

Line 207: “in follow aspect” ?
Response: We agree that there were problems with the original text. We deleted “in follow aspect”.

Line 216: “teachers rarely use computer” this weak point because your program depends on ergonomic training.
Response: We agree that there were problems with the original text. The sentence has been changed (Page 12, Line 243-248).
Line 232: “A study provide” - name of study author

Response: The sentence has been changed (Page 12, Line 260).

Line 254: “Annual prevalence change” - change in frequency - not prevalence

it is not annual - it is at the end of the study

Response: We agree that there were problems with the original text. The sentence has been changed (Page 13, Line 275-283).

Line 266-290: too much expanded discussion of shortcomings in the study and unnecessary basic knowledge explanation - should be reduced in no more 3-4 lines

Response: We have improved and expanded text replacing this paragraph that begins on line 290, page 14 of the discussion.

Conclusions:

Line 300-303: “A significant improvement in awareness…” - unneeded repetition – omit

Response: We followed the suggestion.

Figure 2: no need for this figure - already clarified in tables

Response: The factor loading plot of Correspondence Analysis visually shows the change in musculoskeletal disorder-related knowledge of attitude and behavior among teachers before and after the intervention. So we choose to retain the figure.

Level of interest: An article of importance in its field
Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests

With the above-mentioned revisions, we believe that the newly prepared manuscript is in accordance with the requirements of BMC Public Health. We hope that these revisions are satisfactory and that the revised version will be acceptable.

Thank you very much.

Best regards.

Yours sincerely

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