Reviewer’s report

Title: A correlation study between the incidence of chronic pain and academic pressure in adolescents in China (Shanghai)

Version: 2 Date: 3 March 2015

Reviewer: Ellen Aartun

Reviewer’s report:

I want to congratulate the authors with a well conducted study. The study is based on a population with almost 3,000 adolescents and the study was aimed to investigate the incidence of chronic pain, current academic pressure and the relationship between these factors. There is a lack of knowledge at this field, so the study topic is highly relevant. However, the study has some major limitations that are necessary to improve before the manuscript is published.

Major Compulsory Revisions

1. There is a problem with the use of the term “incidence”. Incidence is defined as the number of new cases of a disease in a specified population during a given period of time. That means that the authors should have had a population free of chronic pain at baseline and then investigated the number of new cases who developed chronic pain over a period of time, i.e., the study needs to be longitudinal. In the method section it becomes clear that the design of the study is cross-sectional and therefore, the conclusion that has been drawn in this study is not supported by the data. I interpret the pain that is measured in this study to be either a prevalence proportion or a measure of frequency of pain and not an incidence rate. The term “incidence” should be reworded in the manuscript.

2. There might be a problem using the term “chronic pain” in this study. The response options “almost never”, “occasionally”, “often” and “always” are reflecting the frequency of pain and not the duration of pain, see line 166-169. In addition, the authors describe that the pain had to last for more than 10 minutes. Since a usual cut-point for chronic pain is three months, the authors should clearly describe the pain questions. In the current version of the manuscript, the conclusions are not supported of the data and the authors should remove the term “chronic” in the manuscript.

3. How can the authors be sure that “the direct and indirect indicators” are risk factors or “candidate risk factors”? The conducted study is a cross-sectional study and therefore, it is misleading to conclude that the factors are risk factors, but it is possible to conclude that the factors are associated with the outcome. For example, there has been shown a bidirectional association between sleep difficulties and back pain in a previous study, so the authors cannot assume that the associated factor is a risk factor. Please reword “risk factors”.

4. In the analysis, a multivariate logistic regression model was performed. The
model included all risk factors. Some of these factors are describing similar issues that could be closely correlated with each other such as “average daily sitting time” and “sitting time after school” or “how long the adolescent had suffered from nearsightedness” and “when nearsightedness started”. If all factors have been included in the study, there might be a multicollinearity issue in the models. The authors should provide whether or not they have checked for multicollinearity.

5. It is not clear how the authors have performed the analysis. In the last paragraph in the method section they write that the model “included all the risk factors”, but in the presentation of the results they are dividing the results into direct and indirect indicators. In addition, the authors have presented some variables in the method section, but these variables are not presented in the result section (table 4 and table 5). Does it mean that the variables described in the method section are not statistically significant? How many other variables have the authors included in the models and not described in the method section? This is of high importance for the understanding of the models. An example of this confusing set of variables becomes clear in table 5 with the question “Do you often play a musical instrument…” which is a question the authors have not described in the method section, table 2 or table 3. Another example is the question “average daily sitting time” which is described in the methods, but not presented in any table. Please clarify the variables that were included in the models.

6. In the discussion, limitations of the study are not clearly stated or more correctly written, the limitations are not stated at all. Please describe the limitations of this study.

7. In the discussion at line 311, it is not clear what “this study” refers to. The authors are writing that “this study demonstrated bidirectional effects between NSP and sleeping”, but the study design of the current study is cross-sectional and the authors do not have data to support this statement.

Minor Essential Revisions

1. Please use the reference style for BMC Musculoskeletal Disorders.

2. The title of the subhead “Results and analysis” should be changed to “Results”. The analysis has been described in the method section.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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.