Prevalence of complaints of arm, neck and shoulder among computer office workers and the development of a questionnaire on risk factors for these complaints.

Title: Prevalence of complaints of arm, neck and shoulder among computer office workers and the development of a questionnaire on risk factors for these complaints.

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Reviewer: William S Shaw

Reviewer's report:

General
This manuscript describes the psychometric properties of a new 95-item compilation of scales titled the “Maastricht Upper Extremity Questionnaire” (MUEQ). The goal of the questionnaire is to assess upper extremity symptoms and workplace physical and psychosocial risk factors in a single questionnaire. The MUEQ was administered to 264 office workers. From 6 to 33% of respondents reported complaints for various upper extremity regions. The authors report factor analysis results for each of the 7 primary risk factor domains, which led to 14 factors. For most of the 14 factors, internal consistency and item-total correlations met pre-established criteria. The authors conclude that the MUEQ has satisfactory reliability and internal consistency among computer workers.

Although there have been many studies of risk factors for work-related upper extremity disorders, this topic continues to be controversial; thus, research among different working populations is useful to further evaluate the influence of various risk factors and the optimal means for assessing them. My specific comments and recommendations below:

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. Abstract (and throughout): The terms “complaints” and “disorders” are used interchangeably throughout the manuscript. It seems that one intended goal of the MUEQ would be to identify minor complaints of discomfort before the development of a disabling musculoskeletal disorder (“secondary prevention”). There should be some mention of symptom severity and its importance relative to screening and intervention.

2. Introduction, page 5, paragraph 1: Is it the author’s goal that the MUEQ might be used as a routine surveillance instrument in industry? Although the Introduction concludes that a “non-complicated yet comprehensive questionnaire is needed”, a clearer rationale for developing the measure and its intended use could be provided.

3. Methods, page 5: The participation rate among workers was only 44%. From this result, one might conclude that a 95-item survey was too long for routine administration to workers. Some discussion of the participation rate should be provided in the Discussion. Although the prevalence of upper extremity symptoms in this sample appears consistent with past research, was there any anecdotal evidence of reasons for non-participation?

4. Methods, page 6, paragraph 2: If a subset of items were adapted from the JCQ (or the Dutch Musculoskeletal Questionnaire), then some rationale should be provided for choosing the items that were included. This is important, because the psychometric properties of the JCQ have already been fairly well-established in other working populations. If a subset of items provided inadequate reliability, then should more items from the original scale be added?

5. Results/Discussion: The authors report sub-standard reliability (internal consistency) for some of the scales, but one might argue that internal consistency is not the best metric for assessing the reliability of a physical work environment scale. For example, is there any reason to believe that a noisy work environment should also be one with a lack of fresh air? Would test-retest be a better measure of reliability, and is this available from other sources? This psychometric issue deserves some attention in the Discussion.

6. Results: Given the authors’ stated interest in identifying workplace risk factors for upper extremity complaints, it seems unusual that no correlations are provided between risk factor scales and symptom complaints. Are these analyses to be included in a separate manuscript? If yes, this should probably be
stated - otherwise, it seems unclear why the authors stopped short of providing additional tests of measure validation.

7. Results: Although the authors report full-sample results for factor analysis and internal consistency, they make reference to a separate set of analyses using two randomly selected subsets, with few differences in results between the two sub-samples. This contrasts with the usual convention, which is to report results for the first randomly chosen sample, then report differences in the cross-validation sample. Perhaps the sub-sample analyses lacked some statistical power for assessing reliability. If this is true, I would recommend that the authors simply report the full sample results, and leave cross-validation for a subsequent data collection. Otherwise, I'd recommend tabling the results for the first randomly-chosen sub-sample only.

8. Introduction: The Introduction should summarize previous research using either the JCQ or the Dutch Musculoskeletal Questionnaire to predict upper extremity symptoms. Have these two scales been combined in past studies, and do they seem to contribute independently to the prediction of symptoms?

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

9. Abstract, paragraph 2: The abstract states that participants completed baseline questionnaires of symptom complaints in addition to the MUEQ, but the symptom reports are actually included as part of the MUEQ (items 69-95) elsewhere in the manuscript. A consistent terminology should be adopted to avoid confusion.

10. Abstract, paragraph 1: The abstract should specify that the MUEQ was developed to assess “workplace physical and psychosocial risk factors”, not just “risk factors”.

11. Methods, page 6, paragraph 1: The MUEQ is described as having 95 questions, but symptom reporting is not listed as one of the domains (see #2 above). Also, the inclusion of 9 demographic questions is not mentioned in the description of MUEQ domains.

12. Results, page 9, paragraph 2: The number of male and female participants reporting ANY upper extremity complaints should be added to the Results section and to Table 2. I found reference to this result only in the Abstract.

13. Results, page 9, first sentence: The authors state that there was no substantial deviation from normality for the subscales of the MUEQ. It seems doubtful that this would be true for the symptom scales in the MUEQ. Please clarify.

Discretionary Revisions (which the author can choose to ignore)

14. Methods: Factor analysis: Although the authors provide a reasonable rationale for forcing a 2-factor solution (the requirement that subscales be made of at least 3 items), it would be useful to know where initial eigenvalues suggested more than 2 factors. Can this be added?

15. Title: May I suggest a slight re-wording of the title for clarity?: “Prevalence of complaints of arm, neck and shoulder among computer office workers and psychometric evaluation of a risk factor questionnaire”

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

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.