Reviewer's report

Title: Convergence Insufficiency and Accommodative Insufficiency in Children

Version: 0 Date: 12 Dec 2018

Reviewer: Anna Horwood

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I really think that we should be questioning the ever increasing impression that CI and AI are significant public health issues. This is an extreme example of taking very mild deviations from typical values to suggest a significant problem, when it probably is not. It uses abnormal values derived largely from the optometry literature, and I don't think such values are more widely accepted among ophthalmologists or orthoptists. There are multiple methodological weaknesses and assumptions that do not appear to have been considered by the authors, so in its current form I do not feel these data add much to the literature. The only data I feel are clinically significant are the basic country-specific data on "definite CI and AI" - and even then, this could include many people with extremely mild problems.

To make sense of the data, we would also need to know the exact instruction set used to test the children ("tell me when it first goes blurred/double", on a test a child had never done before, is very different from "try as hard as you can to STOP it going blurred/double". They can produce dramatically different results). Were the same instructions used throughout by the same people?

There are some English language issues (e.g. "transversal" and use of commas rather than full stops for the decimal point).

The CISS was never designed as a screening tool, so it needs to be confirmed that it was only used to document symptoms in patients primarily selected on another criterion. It is hardly surprising to find that a questionnaire designed to capture the severity of symptoms in CI, found that symptoms were worse in more severe cases.

There is an overall assumption that CI and AI cause problems with school work, and that the CISS picks up visual symptoms and nothing else - they are certainly all associated, but causal relationships are NOT proven in many cases. It is very plausible that poor concentration, poor engagement with school work or literacy issues can cause mild deficiencies in convergence and accommodation, so eye exercises do not address the problem.

Cases have been labelled as abnormal on very minimally reduced measures (anything worse than one of these - 6cm NPC, 8-8.5cm NPA, 4PD near exophoria); many clinicians would never treat
such mild deficiencies. Monocular accommodative facility is a particularly tricky skill for some people, despite normal binocular values normal because some people drive their accommodation by disparity-driven CA/C linkages, but it improves quickly with a very little practice.

What were the OBD's. Again were they really significant problems, and were they actually more important than the CI?

**Are the methods appropriate and well described?**  
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**  
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**  
If not, please explain in your comments to the authors.

No

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