Reviewer's report

Title: Evaluating heterogeneity in cumulative meta-analyses

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Reviewer: Ingram Olkin

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General
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BMC Journals

Dear Editors,


I have had some problems in trying to evaluate this paper. The reason is that the study depends on a methodology introduced in papers by Higgins & Thompson (2002) (paper 9) and by Higgens et al (2003) (paper 10). Consequently, I needed to study these papers before evaluating this one.

In brief, Higgins et al note that the standard Q statistic for heterogeneity has a chi-square distribution with K-1 degrees of freedom. It is well-known that the mean of Q is the number of degrees of freedom, so they propose use of

\[ H_2 = \frac{Q}{K-1} \]

as an index of heterogeneity.

A second measure is

\[ I_2 = \frac{(H_2 -1)}{H_2} \]

which is a monotone increasing function of H2, so they should yield the same interpretations.

Now we come to the present papers. The authors propose to examine 4 systematic reviews relating to different interventions to promote smoking cessation. These are (i) acupuncture, (ii) clonidine, (iii) nicotine replacement therapy, and (iv) physician advice. Their conclusions are that there is moderate heterogeneity for (i), no heterogeneity for (ii), minimal heterogeneity for (iii), and moderate heterogeneity for (iv).

They also examined cumulative meta-analysis.

Comments.

1. The authors should include a discussion of confidence intervals in the text.
2. Figures A1-1 are poor. In this day of computers, one ought to generate better graphs. Presumably the size of the boxes is proportional to sample size, but does size mean area or length of base. Why not just give specific sample sizes even though they are reflected in the weight
3. I urge giving the actual proportions, not just odds ratios.
CONCLUSION

After due consideration I believe that this paper is informative and recommend publication. The problem of heterogeneity is troublesome, and this paper sheds some light on the application of new methods of analysis.

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