DEVELOPMENT OF AN INTERACTIVE VISUALIZATION OF THE EFFECT OF SENSITIVITY ANALYSIS ON GRADE OUTCOMES

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INTRODUCTION / AIM

To develop an interactive GRADE table that allows for real time visualization of the effect of methodological decisions on strength of evidence from meta-analysis.

METHODS

The statistical program R was used to develop an interactive GRADE table using the shiny package. A recently updated GRADE analysis of the evidence for skin-to-skin contact for the reduction of pain in neonates was used as an example. Users can vary minimum important difference (MID) thresholds (1, 1.5, and 2 points on the premature infant pain profile; absolute risk difference of 10% and 5% for low-pain cut-off of the Neonatal Infant Pain Scale (NIPS)), and exclude high risk of bias studies from analysis.

RESULTS

Changing the PIPP MID changes the level of evidence at 120s from moderate to very low. Varying the NIPS MID raises level of evidence in the immediate post-needle phase from very low, to low. Limiting analysis by risk of bias makes no changes in overall level of evidence, but changes the overall treatment effect and assessments in individual GRADE domains.

DISCUSSION / CONCLUSIONS

Interactive graphics can be easily embedded in online versions of publications or guidelines. By allowing clinicians to visualize how sensitivity analyses affect level of evidence, review authors are able to improve transparency of reporting. This is of particular relevance to neonatal pain research, as Cochrane systematic reviews employ heterogeneous approaches to meta-analysis. The code used to create this table can be made freely available for use by other authors. Future work on this topic should assess the feasibility of automating some decisions.

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