

## Answer to reviews

### Reviewer 1

Comment 1: This is generally a well written and properly conducted systematic review and meta-analysis.

Answer: Thank you for this kind comment.

Comment 2. In the introduction, the authors need to explicitly describe the objective and hypothesis of the study.

Answer: Thank you for this comment, this has now been addressed. The objective and hypotheses have been explicitly stated in the last paragraph of the Introduction.

Comment 3. The funnel plot is counterfactual that most studies are in the tip of the funnel plot, in fact, most of the studies are supposed to be at the base of the plot (e.g. small studies with large variance should predominate). Please explain this.

Answer: Thank you for this comment, this has now been addressed. This is a result of the fact the standard error of the main effect Hackstian-Wallen T is dependent on the sample size (see Rodriguez, M. C. and Y. Maeda (2006). "Meta-analysis of coefficient alpha." *Psychol Methods* 11(3): 306-322) which produces this altered funnel plot . Hunter et al. (Hunter JP, Saratzis A, Sutton AJ, Boucher RH, Sayers RD, Bown MJ. In meta-analyses of proportion studies, funnel plots were found to be an inaccurate method of assessing publication bias. *Journal of clinical epidemiology*. 2014 Aug 1;67(8):897-903) suggest presenting in this case the main effect against sample size (see also Sterne JA, Egger M. Funnel plots for detecting bias in meta-analysis: guidelines on choice of axis. *Journal of clinical epidemiology*. 2001 Oct 1;54(10):1046-55). This has now been performed in the manuscript is Figure 3C, which is more reasonable.

Comment 4. In the meta-regression analysis, will you consider other variables such as year of the medical student into analysis?

Answer: Thank you for this comment. This is an interesting suggestion and it was considered but we felt was not appropriate. The reason for this that the various and different healthcare students have different compulsory years during their studies and for example a

fourth year student in one year might hold a different meaning to another science and hence wouldn't be possible to interpret. This is the main reason we chose not to perform this.

Comment 5. The sample size in many studies are not very large; thus the small study effect may be discussed. e.g. small studies are more likely to report better results. cite a reference (Crit Care. 2013 Jan 9;17(1):R2. doi: 10.1186/cc11919.) for the discussion as this phenomenon has been well characterized in other fields.

Answer: Thank you for this comment, this has now been addressed. This issue has now been discussed in the section of limitations and the reference has been added.

Reviewer 2

Comment 1: This is a comprehensive study in which a systematic review with meta-analysis was conducted. Generally, it is well prepared with good format. Notably, a large number of relevant studies are carefully reviewed and analyzed. It is eligible for publication in this journal.

Answer: Thank you for this kind comment.

Comment 2: Only some minor spelling and grammar issues should be revised. Please see the words highlighted by yellow in the attachment.

Answer: Thank you for this comment, this has now been addressed. We have addressed the issues pointed out and re-read and edited the manuscript in terms of grammar and syntax.

Comment 3: Additionally, if the authors can update the last search, it will be better.

Answer: Thank you for this comment, this has now been addressed. We have not extended the search beyond the specified date of December 2016. Sensitivity analysis and cumulative meta-analysis, now added to manuscript as Figure 5, indicate that essentially after 2013 the effect has not changed at all and hence the results are stable up until 2016, and most likely will remain so with future studies. We hope this is acceptable.