



# Letter to the Editor: Minimally Invasive versus Open Surgery for Spinal Metastasis: A Systematic Review and Meta-Analysis

Uzair Ali, Muhammad Ali Tariq

*Department of Surgery, Dow University Hospital, Dow International Medical College, Karachi, Pakistan*

Dear Editor,

We with great interest read the article titled “Minimally invasive versus open surgery for spinal metastasis: a systematic review and meta-analysis” by Hinojosa-Gonzalez et al. [1] published in Asian Spine Journal. The authors are commended for a well-written paper involving 10 studies with 577 participants. While we have a great appreciation for the work conducted by the authors there are certain issues that we feel need to be addressed.

Firstly, the authors mentioned that this study was performed in accordance with the PRISMA (Preferred Inventory for Systematic Reviews and Meta-Analysis) guidelines; however, a protocol was not registered at PROSPERO (Prospective Register of Systematic Reviews) or any other similar registry such as INPLASY (International Platform of Registered Systematic Review and Meta-Analysis Protocols). Registration promotes transparency in the review process, can minimize the risk of outcome and reporting bias, and avoids identical reviews being performed [2]. Secondly, high heterogeneity was observed in a few outcomes thus affecting the robustness of the results authors should have performed a sensitivity analysis to explain this source of heterogeneity.

Thirdly, recognition of publication bias is an impor-

tant step in a meta-analysis; however, it is important to highlight that the authors of this study did not assess and report for publication bias. Publication bias is often attributed to unpublished or unreported studies which have not been published since they report negative or not significant results. Publication bias overestimates the potential benefits of an intervention and leads to misrepresentation of adverse effects of a therapeutic intervention. The presence of publication bias in systematic review and meta-analysis is problematic as such a bias may invalidate the conclusions reached [3]. Some commonly utilized tools to assess this bias are funnel plot, Egger’s regression test, and Duval and Tweedie’s trim and fill [4,5]. In the present study, an evaluation for publication bias would have significantly improved the credibility of the findings.

Finally, the authors mention that they utilized the methodology suggested by Wan et al. [6] to estimate mean and standard deviation for studies where median with range or interquartile range were provided. A major limitation of this method is that it assumes the outcome variable is normally distributed, which may be unlikely because otherwise the authors would have reported the data as mean with standard deviation and studies typically report the sample median and other sample quantiles when data

---

Received Sep 28, 2021; Accepted Sep 28, 2021

Corresponding author: Muhammad Ali Tariq

Department of Surgery, Dow University Hospital, Dow International Medical College, Suparco Road, Karachi, Pakistan

Tel: +92-0312-2319607, Fax: +92-2134822452, E-mail: MUHAMMAD.TARIQ16@dimc.duhs.edu.pk

are skewed. Therefore, we recommend the authors use methods as proposed by McGrath et al. [7] to estimate the sample mean and standard deviation for skewed data when the underlying distribution is unknown.

Once again, the authors are to be congratulated on their findings. We hope the authors will address the concerns raised, as this will only serve to strengthen the credibility of the conclusions reported in this meta-analysis.

### Conflict of Interest

No potential conflict of interest relevant to this article was reported.

### Author Contributions

UA: concept and editing; MAT: writing; and all authors read and approved the final manuscript.

### References

1. Hinojosa-Gonzalez DE, Roblesgil-Medrano A, Villarreal-Espinosa JB, et al. Minimally invasive versus open surgery for spinal metastasis: a systematic review and meta-analysis. *Asian Spine J* 2021 Sep 1 [Epub]. <https://doi.org/10.31616/asj.2020.0637>.
2. Moher D, Booth A, Stewart L. How to reduce unnecessary duplication: use PROSPERO. *BJOG* 2014;121:784-6.
3. Sutton AJ, Song F, Gilbody SM, Abrams KR. Modeling publication bias in meta-analysis: a review. *Stat Methods Med Res* 2000;9:421-45.
4. Egger M, Davey Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *BMJ* 1997;315:629-34.
5. Shi L, Lin L. The trim-and-fill method for publication bias: practical guidelines and recommendations based on a large database of meta-analyses. *Medicine (Baltimore)* 2019;98:e15987.
6. Wan X, Wang W, Liu J, Tong T. Estimating the sample mean and standard deviation from the sample size, median, range and/or interquartile range. *BMC Med Res Methodol* 2014;14:135.
7. McGrath S, Zhao X, Steele R, Thombs BD, Benedetti A; DEPRESSION Screening Data (DEPRESSD) Collaboration. Estimating the sample mean and standard deviation from commonly reported quantiles in meta-analysis. *Stat Methods Med Res* 2020 Jan 30 [Epub]. <https://doi.org/10.1177/0962280219889080>.