

LETTER TO THE EDITOR

# The misuse of funnel plots in meta-analyses of proportions: are they really useful?

Huzaifa Ahmad Cheema , Abia Shahid , Muhammad Ehsan and Muhammad Ayyan

Department of Internal Medicine, King Edward Medical University, Lahore, Pakistan

Correspondence to: Huzaifa Ahmad Cheema; E-mail: [huzafaahmadcheema@gmail.com](mailto:huzafaahmadcheema@gmail.com)

We read with great interest the recent systematic review and meta-analysis by Pisano *et al.* [1], which compared ambulatory blood pressure monitoring (ABPM) and office blood pressure (OBP) methods to classify hypertension (HTN) in kidney transplant recipients. The authors reported a prevalence of uncontrolled HTN detected by ABPM of 56% [95% confidence interval (CI) 46–65%]. The pooled prevalence of uncontrolled HTN according to OBP was 47% (95% CI 36–58%).

In an otherwise excellent meta-analysis, we find one methodological flaw that may have biased the results. The authors used funnel plots and Egger's regression test to assess for publication bias in their pooled proportions. While funnel plots are a widely used measure to evaluate publication bias, they have been found to give erroneous results when pooling prevalence data [2]. Hence, they are not recommended to be used when dealing with prevalence effect size due to their non-interpretability in such cases [3].

However, in this scenario, we have a robust alternative to the funnel plot, which was introduced by Furuya-Kanamori *et al.* [3] in their article as the 'Doi plot'. When applied to real-life meta-analyses, the Doi plot and its associated Luis Furuya-Kanamori (LFK) index were superior to the funnel plot and Egger's test for the detection of publication bias in terms of both sensitivity and specificity [3]. Moreover, the Doi plot did not suffer from the limitations of funnel plot in meta-analyses of prevalence studies and retained its interpretability and utility in such cases. Despite these findings, the use of funnel plot remains widespread in current literature with many authors being unaware of its limitations and the availability of better alternatives, which threatens the validity of their results [4].

We urge all authors to use the Doi plot when pooling proportions and call upon Pisano and colleagues to reassess publication bias in their results using this more accurate measure. Of note, the Cochrane Handbook for Systematic Reviews of Interventions [5] mandates the search of at least two databases to provide extensive coverage and reduce publication bias, while the authors only searched one database, MEDLINE, via both PubMed and Ovid. Hence, it is even more imperative to accurately investigate publication bias in this scenario.

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## CONFLICT OF INTEREST STATEMENT

None declared.

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