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Rates of reporting bias in homeopathy clinical trials compare favourably to those in conventional medical research

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Summary

In 2022, a study published in *BMJ Evidence-Based Medicine* by Gartlehner et al.[1] claimed to have found evidence of 'shockingly poor' scientific and ethical standards in homeopathy research, due to unusually high levels of reporting bias in homeopathy clinical trials. Given the seriousness of this claim, HRI undertook a thorough critical assessment and re-analysis of the data used by these authors to assess validity of the study. Re-analysis found that Gartlehner et al.'s conclusions were not justified by their own results and, most crucially, the 2022 study results themselves were highly inaccurate. Once corrected, the data demonstrates that the actual level of reporting bias in homeopathy trials is not a cause for concern, comparing favourably with other medical disciplines:

Table 1. Reporting bias in homeopathy trials: Gartlehner et al. (2022)[1] original findings vs Mosley & Roberts (2026)[2] corrected re-analysis, benchmarked against the wider medical literature.

	Homeopathy Gartlehner et al. (2022)	Homeopathy Mosley & Roberts (2026)	Conventional medical literature
Registered trials that remain unpublished	38%	7%	46%
Published trials that were not registered	50%	40%	48%
Trials with a change in primary outcome	25%	11%	31%

This re-analysis, published in the *Journal of Evaluation in Clinical Practice* (Mosley & Roberts, 2026)[2] clarifies that scientific and ethical standards in homeopathy are currently sound and the published evidence remains valid.

What is reporting bias?

Reporting bias is an umbrella term for ways that scientific evidence can be distorted due to biased selection of which results are published, with desired findings being more likely to be published than undesirable results. It is a documented issue across all areas of medical research and has been a point of deep academic discussion for over 30 years[3,4].

For clinical trials it can take three main forms: trials that are registered and conducted but never published, trials that are published without prior registration (publicly documenting how the study will be carried out before it begins), and trials whose primary outcome (the intended key result) is changed between registration and publication.

Reporting bias matters because it can distort the apparent effectiveness of a treatment: when the published literature does not contain all trial results, especially those with negative findings, meta-analyses (studies aiming to synthesise results from all similar studies on a specific topic) can over-estimate the actual effect of an intervention due to the missing data.

As a medical discipline that has produced multiple pivotal meta-analyses, reporting bias is an important aspect of homeopathy research that has not been sufficiently studied. It was briefly assessed in 2016 by Thomas et al.[5], but this garnered little attention. Instead, Gartlehner 2022[1] represented the first dedicated study of both the rate of reporting bias, and its impact on meta-analysis effect size estimates in homeopathy clinical trials.

Gartlehner 2022 – key findings lack context

Specifically, the main findings of Gartlehner et al. were:

- **38%** of registered homeopathy trials remained unpublished (62% publication rate)
- **50%** of published trials had not been registered in a clinical registry (50% registration rate)
- **25%** of registered and published trials showed a change in primary outcome
- Retrospective registration was more frequent than prospective registration (52% vs 48%).

Gartlehner et al. failed to provide sufficient context for their findings: no comparative data on levels of reporting bias in other medical disciplines were provided in their abstract, key findings section, or main text of the paper. Without this context, most readers would naturally accept the authors' presentation of their results for homeopathy as being 'shockingly poor'. To check the validity of this interpretation, HRI performed a horizon scan of the wider medical literature which found that, on average:

- **54% of registered conventional medical trials are published**, compared to 62% of homeopathy trials[1]
- **31% of registered and published conventional trials show discrepancies in primary outcome measures,** compared to 25% of homeopathy trials.[1]

Once placed in an appropriate context, **it is clear that Gartlehner et al.'s conclusion that reporting bias is a particular problem in homeopathy is not substantiated by their own results**.

Gartlehner 2022 – reliability concerns

Gartlehner et al. did not only misinterpret their findings – after publication, concerns were quickly raised about inaccuracies in the results. To understand how this could have happened, one has to look at the methodology used. Two separate searches were conducted, generating two source tables:

- **Trial registries search (published as Supplementary Table 2) –** all registered homeopathy studies identified were checked to see whether they went on to be published
- **Published literature search (published as Supplementary Table 3) –** all published homeopathy clinical trials identified were checked to see whether they were registered.

Gartlehner et al. did not cross-check or combine the data from these two searches, meaning that information for any given trial could be inconsistent across the two data tables.

Mosley & Roberts 2026 – 39% error rate in 2022 data

It was immediately clear to researchers familiar with the homeopathy evidence base that there were errors in a substantial number of trials listed by Gartlehner 2022. A systematic re-analysis was therefore warranted to assess the impact of errors on the study results. Data from Gartlehner et al.'s Supplementary Tables 2 and 3 were combined, then checked, creating a single, internally consistent dataset of N=231 registration:publication trial pairs.

Using this pooled set of 231 trials, it was found that 39% of the studies contained inaccuracies and/or inconsistencies. This substantial overall error rate in the underlying source data includes studies being assigned incorrect registration status (8%); incorrect publication status (26%) and/or incorrect or impossible registration timing (28%).

Mosley & Roberts 2026 – corrected findings

The pooled Gartlehner dataset (N=231) was re-analysed to provide accurate results on reporting bias in homeopathy. Systematic application of appropriate, clarified eligibility criteria and decision rules excluded n=50 studies (pre-2000 publications and non-homeopathy trials) creating a refined dataset for re-analysis (N=181). **This is not a sub-set of data, but a coherent set of trials** performed after 2000 (when trial registries were first introduced) and published between 2002 and 2021, **that ought to have been the dataset analysed by Gartlehner et al**. to address the stated aims of their study.

Accurate rates of reporting bias obtained from the corrected dataset were:

- **93%** of the identified registered trials were published (not **62%** as stated by Gartlehner et al.)
- **60%** of published trials had been registered (not **50%** as stated by Gartlehner et al.)
- **11%** of clearly prospectively registered and published trials showed a primary outcome change (not **25%** as stated by Gartlehner et al., who made no distinction between prospectively and retrospectively registered studies).
- **64%** of trials were registered prospectively or during enrolment (not **48%** as stated by Gartlehner et al.).

These corrected results demonstrate that the **level of reporting bias in homeopathy trials is not a cause for concern, and compares favourably with other medical disciplines** (see Table 1).

Do clinical trials over-estimate the benefits of homeopathy?

The highly respected scientific journal *BMJ* published a press release announcing publication of the Gartlehner et al. study, entitled: 'Poor research practice suggests true impact of homeopathy may be "substantially" overestimated'.[7] This headline – quoting a conclusion stated in the paper – was based on Gartlehner et al.'s analysis of data within a landmark study on homeopathy (Mathie et al. 2017)[6]: they found that non-individualised homeopathic treatment had a statistically significant positive effect beyond placebo in unregistered trials (SMD −0.53), but there was no significant difference between homeopathy and placebo in registered trials (SMD −0.14).

However, meta-regression – a test designed to determine whether the difference between two groups is statistically real or could just be due to chance – did not reach significance. In other words, contrary to their claims, **Gartlehner et al.'s own results did not demonstrate a significant difference in the clinical effect sizes detected for homeopathy between registered and unregistered trials, so current estimates of the treatment effect of homeopathic remedies from clinical trials remain valid**.

Limitations of the re-analysis

As with all research endeavours, there are limitations and considerations for the Mosley & Roberts 2026 re-analysis (as detailed in the publication[2]). For example, HRI's removal of older, unregistered studies, may arguably have introduced positive bias. However, as trial registries did not exist until 2000, we considered it illogical to include studies that were initiated prior to, or in, 2000. It is also worth noting that, as Gartlehner's data was based on trial registrations up to 2019 and publications up to 2021, the rates of reporting bias for homeopathy trials may change in future updates on this topic.

Conclusion

The Mosley & Roberts 2026 publication is a peer-reviewed re-analysis of the Gartlehner et al. 2022 study, based on the same (corrected) source data but applying a more robust, clarified methodology. This re-analysis showed that, contrary to the claims made in 2022, homeopathy research standards are not 'poor', and reporting bias is no more cause for concern in homeopathy than in any other medical field. Reporting bias remains a recognised issue across all areas of clinical research, and this study in homeopathy emphasises the importance of continued global efforts to improve trial registration, transparency, dissemination, and reporting standards.

References

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