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**Title Registration for a Systematic Review:  
Publication bias in effectiveness studies of  
international development interventions:  
A review of evidence from systematic reviews**  
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Rothstein and Howard White**

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**TITLE OF THE REVIEW**

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Publication Bias in Effectiveness Studies of International Development Interventions:  
A Review of Evidence from Systematic Reviews

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## BACKGROUND

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Publication bias occurs if the outcome of a study affects its likelihood or speed of publication, with the result that findings in the published literature are systematically unrepresentative of the population of studies (Rothstein et al., 2005). Most commonly, there is a bias in favour of positive and statistically significant outcomes. The research findings may not confirm the researcher's own prior beliefs so they do not proceed with the research ('the file drawer problem'), journals and referees have a bias against null effects as 'not telling us anything', and the designers, funders or implementers of interventions may seek to actively suppress null or adverse findings or at least do not incentivise their publication. According to Rosenthal (1979), "the extreme view of the 'file drawer problem' is that journals are filled with the 5% of studies that show Type I errors, while the file drawers are filled with the 95% of the studies that show non-significant results" (p. 638). Franco et al. (2013) followed a cohort of 221 social science studies, finding that significant results were 40% more likely to be published than null findings.

According to the Cochrane Handbook, publication bias is related to other types of reporting bias (Sterne et al., 2011). Outcome reporting bias occurs when a range of outcomes data are collected in a study, but only outcomes favourable to the researchers' priors are reported. Language bias arises where studies with statistically significant findings are more likely to be published in English language journals. In the case of location bias, significant findings may be more likely to appear in journals that are better indexed in electronic databases. A type of location bias referred to as 'regional or developed country bias' may also work in the opposite direction, whereby studies published in journals based in developing countries may be more likely to present positive findings (Vickers, 1998; cited in Sterne et al., 2011). As the latter example suggests, reporting biases may arise due to study quality (risk of bias in the estimation of study effects). Since the effects of publication bias and study quality are both likely to increase the effect sizes in published studies, it is important to differentiate study quality and small study effects when assessing publication bias (Peters et al., 2008).

Systematic reviews should assess possible publication bias as part of their analysis. Item 15 of the PRISMA standards 'Risk of bias across studies' is 'Specify any assessment of risk of bias which may affect the cumulative evidence (such as publication bias, selective reporting within studies)'. A variety of methods are available for this assessment. The only direct test for publication bias is to compare findings for published and unpublished studies; previous assessments have shown that unpublished studies on average have smaller effect sizes than published studies (Lipsey & Wilson, 1993). Evidence for publication bias may be provided indirectly through graphical inspection, for example of cumulative meta-analysis and funnel plots (Sterne & Egger, 2001) as well as statistical tests (e.g., Egger et al., 1997; Harbord et al., 2005; Rucker et al., 2008) for small study effects. These tests are based on the assumption that there are weaker incentives for researchers and journals to publish smaller sample studies that do not show significant findings because the cost of such studies is less and/or

that authors of underpowered (small-sample) studies are more likely to undertake *p*-hacking in order to find statistically significant and therefore publishable results. Authors have proposed methods to correct for publication bias by imputing missing small sample studies and re-estimating the pooled effect (Duvall & Tweedie, 2000).

In Campbell reviews, item R12 of the MEC2IR Reporting Standards states that ‘Findings should typically include concise information about the quality of the body of evidence for the outcome (such as study limitations, consistency of effect, imprecision, indirectness and publication bias)’ and item R52 states to ‘Describe any methods used for assessing the risk of reporting biases such as publication bias.’

It is not clear to what extent publication bias affects international development effectiveness research. However, suspicion about the representativeness of findings published in econometrics journals goes back to the 1980s (Leamer, 1983). Anecdotal evidence suggests that authors anticipate journals and referees will have a bias against results that are less interesting or are statistically underpowered, and few journals themselves have policies on the publication of null findings. The exploratory social science research tradition and, until recently, limited production of study protocols or pre-analysis plans suggests there are potentially severe problems of publication bias due to *p*-hacking. We might expect this problem to arise particularly in studies of observational data. But publication bias due to file-drawer effects may also be partly mitigated by the traditions of publication in particular disciplines, such as working papers in economics and political science, and modern electronic dissemination.

There has been no assessment of the extent of publication bias as it affects studies of effectiveness in international development. The growing number of systematic reviews in this area provides the opportunity to make such an assessment. In addition, this systematic review will assess the frequency and quality with which publication bias is being assessed in systematic reviews of international development interventions. The review will make a comparative assessment of this issue across three sources of international development reviews: (1) those published by Campbell’s International Development Coordinating Group (IDCG), (2) those published by the EPPI-Centre, and (3) reviews in the 3ie database of international development systematic reviews published by neither IDCG nor the EPPI-Centre.

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## **OBJECTIVES**

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The review has two objectives: (1) assessing the frequency and quality of analysis of publication bias in systematic reviews of international development; and (2) assessing the extent of publication bias in the field of international development.

Specifically, the review will address four questions:

1. Do systematic reviews of the effectiveness of international development interventions assess publication bias?
2. Where it is done, what methods are used to assess publication bias in systematic reviews of the effectiveness of international development interventions?
3. Does the frequency and quality of the analysis of publication bias vary across the three sources of systematic reviews (IDCG, EPPI-Centre and other)?
4. What is the extent of publication bias, if any, in the field of effectiveness studies of international development interventions?

There are related research questions that are beyond the scope of this review, most notably (1) outcome reporting bias and (2) the adequacy of the search strategy to identify (i) primary studies that have been registered but appear to have not been published and (ii) grey literature.

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## **EXISTING REVIEWS**

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There are no existing reviews of publication bias in international development.

We are aware of one systematic review of the extent of publication and outcome reporting bias for cohort analysis in healthcare (Dwan et al., 2013). A number of other studies of publication bias are reported in the Cochrane Handbook chapter on publication bias (Sterne et al., 2011).

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## **INTERVENTION**

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This is a review of the study of publication bias in systematic reviews of the effectiveness of international development interventions. Systematic reviews on international development interventions cover a wide range, such as (but not restricted to) governance and accountability, humanitarian interventions, education and water supply and sanitation. These can be broadly defined as social and economic development interventions.

Systematic reviews not examining the effectiveness of social or economic development (e.g., biomedicine) interventions will be excluded from the review.

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## **POPULATION**

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This systematic review is a methods review, so the population comprises the systematic reviews to be included in the review. Systematic reviews are eligible for inclusion if they

examine studies conducted among populations in developing nations, also commonly referred to as low- or middle-income countries.

The review will cover systematic reviews from three sources:

1. All IDCG effectiveness reviews.
2. All reviews published by the EPPI-Centre of the effectiveness of international development interventions.
3. A random sample of 30 systematic reviews from the 3ie database of systematic reviews that do not fall into one of the above two categories.

Systematic reviews of interventions conducted in non-developing country contexts (also referred to as high-income countries) will be excluded.

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## **OUTCOMES**

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The outcomes are:

1. The frequency of analysis of publication bias in international development systematic reviews.
2. The quality of analysis of publication bias in international development systematic reviews.
3. The extent of publication bias in international development, as measured directly or indirectly.

To assess these issues, systematic reviews reporting any outcomes will be eligible and the analysis will cover all outcomes included in those studies and all methods used to assess publication bias directly or indirectly.

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## **STUDY DESIGNS**

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Systematic reviews of effectiveness of international development interventions will be included. For IDCG reviews and reviews in the 3ie database, inclusion in that source is taken as indicating that it is an international development systematic review. For EPPI-Centre reviews, all included studies must refer to populations in low- or middle-income countries for the review to be included. There will be no assessment of the quality of the systematic review. There will a quality assessment of the analysis of publication bias as a part of the review process.

Non-effectiveness reviews will not be included.

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## REVIEW AUTHORS

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**Lead review author:** The lead author is the person who develops and co-ordinates the review team, discusses and assigns roles for individual members of the review team, liaises with the editorial base and takes responsibility for the on-going updates of the review.

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**ROLES AND RESPONSIBILITIES**

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- Content: Manisha Gupta, Hugh Waddington, Howard White and Hannah Rothstein.
- Systematic review methods: Hugh Waddington, Manisha Gupta and Hannah Rothstein.
- Statistical analysis: Hugh Waddington and Hannah Rothstein.
- Information retrieval/data extraction/tabulation: Manisha Gupta and Jill Adona. The information retrieval role is narrowly defined by the nature of the review.
- Writing Title, Protocol, and Review: Manisha Gupta, Hugh Waddington, and Howard White.

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**FUNDING**

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No.

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**POTENTIAL CONFLICTS OF INTEREST**

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The authors of this review are authors of some of the studies that will be included in the review.

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**PRELIMINARY TIMEFRAME**

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Note, if the protocol or review are not submitted within 6 months and 18 months of title registration, respectively, the review area is opened up for other authors.

- January 2017
- June 2017

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## AUTHOR DECLARATION

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By completing this form, you accept responsibility for preparing, maintaining, and updating the review in accordance with Campbell Collaboration policy. The Coordinating Group will provide as much support as possible to assist with the preparation of the review.

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**HN White**

