Use of funnel plots to detect publication bias in meta-analyses published in *BMJ* from July 2003 to June 2005

Review	No of analyses using funnel plots*	Typical quote from meta-analysis	No of studies in analysis	Q statistic†
NSAIDs and Alzheimer's risk[w1]	1	Visual inspection of the funnel plot does not indicate publication bias	10	<0.1
Methylxanthines for chronic obstructive pulmonary disease[w2]	0	Publication bias [not evaluated] since too few trials were available to perform a meaningful analysis	(3)	(<0.1)
Metformin for polycystic ovaries[w3]	2	The funnel plot implies publication bias	5	≥0.1
		The funnel plot was asymmetrical which raises the possibility of publication bias	9	<0.1
Breast feeding and blood pressure in adult life [w4]	2	Evidence of [publication] bias was provided by a funnel plot	26	<0.1
		No evidence of publication or inclusion bias, as the results were similar for studies of different sizes	23	<0.1
Exercise training in congestive heart failure[w5]	2	The potential for publication bias was examined visually by constructing a funnel plot	9	NT
			9	NT
Antibiotic treatment in sepsis[w6]	1	We examined a funnel plot [for] potential selection bias (such as publication bias)	63	≥0.1
Prevention of falls in elderly people[w7]	2	A visual inspection of the funnel plot indicated no evidence of publication bias	26	<0.1
			35	<0.1
Steroid injections for knee osteoarthritis[w8]	1	A funnel plot … showed that there was an absence of small studies with small effects	6	≥0.1
NSAIDs-opioids in renal colic[w9]	0	We attempted to assess publication bias with a funnel plot.... Insufficient trials were available	(10)	(≥0.1)
Home monitoring of blood pressure[w10]	2	The funnel plot showed some asymmetry and Egger's test for publication bias was significant	13	<0.1
			16	<0.1
Topical NSAIDs in osteoarthritis[w11]	1	Possible publication bias was sought by a funnel plot and Egger test ... showed notable asymmetry	11	<0.1
Steroids for sepsis/septic shock[w12]	1	We sought evidence of publication bias using the funnel plot method [but no further mention on results]	15	<0.1

Preventing NSAID gastrointestinal toxicity[w13]	5	We used funnel plots … to assess for … small study effects, including publication bias…. We found no evidence of publication bias in any of the five comparisons [unclear which outcomes were tested by funnel plots]	15	NR
			6	NR
			23	NR
			51	NR
			17	NR
Migraine and risk of ischaemic stroke[w14]	1	We did not find evidence of publication bias either graphically from the funnel plot or quantitatively	14	≥0.1
Hormone replacement therapy and subsequent stroke[w15]	1	We assessed publication bias using Eggers test. … We found no significant publication bias	17	≥0.1
Risk factors for pre-eclampsia[w16]	8	Publication bias is always a concern for systematic reviews. Funnel plots for the risk factors where over three studies were included were symmetrical	5	<0.1
			5	<0.1
			3	<0.1
			3	≥0.1
			7	<0.1
			5	<0.1
			3	≥0.1
			6	<0.1
Proton pump inhibitors for peptic ulcer bleeding[w17]	3	The funnel plots for the three outcomes … show slight asymmetry, suggesting the possibility of publication bias	18	≥0.1
			19	<0.1
			17	≥0.1
Supplements for preventing infections[w18]	0	Although we intended to use funnel plots … the relatively small number of studies reporting each outcome precluded such an assessment	(4)	(<0.1)
Trial participation to improve outcomes[w19]	1	The funnel plot … showed no asymmetry, indicating a low risk of publication bias	70	<0.1
Treatment for ocular hypertension[w20]	0	We did not perform a statistical test for the detection of publication bias, since such tests have very low power in meta-analyses of only five trials	(5)	(≥0.1)

NSAID: non-steroidal anti-inflammatory drug, NR=not reported, NT=not tested

*0 indicates funnel plots were considered for evaluating publication bias but eventually not applied; in these cases the columns on studies and Q refer to the meta-analysis that had the largest number of studies in the systematic review.
†P value for test of heterogeneity as tested with the Q statistic and is classified as significant using a threshold of P=0.1.

Web references (posted as supplied by the author)

w1. Etminan M, Gill S, Samii A. Effect of non-steroidal anti-inflammatory drugs on risk of Alzheimer's disease: systematic review and meta-analysis of observational studies. *BMJ* 2003;327:128.
w2. Barr RG, Rowe BH, Camargo CA Jr. Methylxanthines for exacerbations of chronic obstructive pulmonary disease: meta-analysis of randomised trials. *BMJ* 2003;327:643.
w3. Lord JM, Flight IH, Norman RJ. Metformin in polycystic ovary syndrome: systematic review and meta-analysis. *BMJ* 2003;327:951.
w4. Owen CG, Whincup PH, Gilg JA, Cook DG. Effect of breast feeding in infancy on blood pressure in later life: systematic review and meta-analysis. *BMJ* 2003;327:1189.
w5. Piepoli MF, Davos C, Francis DP, Coats AJ; ExTraMATCH Collaborative. Exercise training meta-analysis of trials in patients with chronic heart failure (ExTraMATCH). *BMJ* 2004;328:189.
w6. Paul M, Benuri-Silbiger I, Soares-Weiser K, Leibovici L. Beta lactam monotherapy versus beta lactam-aminoglycoside combination therapy for sepsis in immunocompetent patients: systematic review and meta-analysis of randomised trials. *BMJ* 2004;328:668.
w7. Chang JT, Morton SC, Rubenstein LZ, Mojica WA, Maglione M, Suttorp MJ, Roth EA, Shekelle PG. Interventions for the prevention of falls in older adults: systematic review and meta-analysis of randomised clinical trials. *BMJ* 2004;328:680.
w8. Arroll B, Goodyear-Smith F. Corticosteroid injections for osteoarthritis of the knee: meta-analysis. *BMJ* 2004;328:869.
w9. Holdgate A, Pollock T. Systematic review of the relative efficacy of non-steroidal anti-inflammatory drugs and opioids in the treatment of acute renal colic. *BMJ* 2004;328:1401.
w10. Cappuccio FP, Kerry SM, Forbes L, Donald A. Blood pressure control by home monitoring: meta-analysis of randomised trials. *BMJ* 2004;329:145.
w11. Lin J, Zhang W, Jones A, Doherty M. Efficacy of topical non-steroidal anti-inflammatory drugs in the treatment of osteoarthritis: meta-analysis of randomised controlled trials. *BMJ* 2004;329:324.

w12. Annane D, Bellissant E, Bollaert PE, Briegel J, Keh D, Kupfer Y. Corticosteroids for severe sepsis and septic shock: a systematic review and meta-analysis. *BMJ* 2004;329:480.
w13. Hooper L, Brown TJ, Elliott R, Payne K, Roberts C, Symmons D. The effectiveness of five strategies for the prevention of gastrointestinal toxicity induced by non-steroidal anti-inflammatory drugs: systematic review. *BMJ* 2004;329:948.
w14. Etminan M, Takkouche B, Isorna FC, Samii A. Risk of ischaemic stroke in people with migraine: systematic review and meta-analysis of observational studies. *BMJ* 2005;330:63.
w15. Bath PM, Gray LJ. Association between hormone replacement therapy and subsequent stroke: a meta-analysis. *BMJ* 2005;330:342.
w16. Duckitt K, Harrington D. Risk factors for pre-eclampsia at antenatal booking: systematic review of controlled studies. *BMJ* 2005;330:565.
w17. Leontiadis GI, Sharma VK, Howden CW. Systematic review and meta-analysis of proton pump inhibitor therapy in peptic ulcer bleeding. *BMJ* 2005;330:568.
w18. El-Kadiki A, Sutton AJ. Role of multivitamins and mineral supplements in preventing infections in elderly people: systematic review and meta-analysis of randomised controlled trials. *BMJ* 2005;330:871.
w19. Vist GE, Hagen KB, Devereaux PJ, Bryant D, Kristoffersen DT, Oxman AD. Systematic review to determine whether participation in a trial influences outcome. *BMJ* 2005;330:1175.
w20. Maier PC, Funk J, Schwarzer G, Antes G, Falck-Ytter YT. Treatment of ocular hypertension and open angle glaucoma: meta-analysis of randomised controlled trials. *BMJ* 2005;16;331:134.