

Supplementary: Assessing treatment effects and publication bias across different specialties in medicine

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1. Primary study characteristics
 - a. What are the descriptives of the single studies per medical specialty? Data characteristics include effect sizes, their sample sizes, the publication years, the citations, and the journal rank.
 - b. What is the proportion of significant effects per specialty? Are the shapes of the distribution of the p -values similar across specialties?
 - c. Are the effect sizes (in terms of statistical significance) of the studies associated with medical specialty, sample size, journal rank, citations, or publication year?
 2. Combined effect estimates characteristics
 - a. What are the average combined effect estimates and variability per medical specialty?
 - b. What is the distribution of test statistics, and the proportion of significant combined effects reported per specialty? Are there differences between specialties?
 - c. Are the overall effect sizes (in terms of statistical significance) of the meta-analyses associated with specialty, sample size, in-field specific ranking of the journal, the number of citations, and the publication year?
 3. Estimation of publication bias
 - a. What is the evidence for publication bias as a function of sample size (i.e., number of studies per review) across specialties?
 - b. Is publication bias associated with specialty, sample size of studies, in-field specific ranking of the journals, number of citations of the studies, publication year of review, and number of studies included?
 4. Adjustment for publication bias
 - a. What is the effect of publication bias in terms of overall effect change (the effect after the adjustment compared to the effect before the adjustment)? Are there differences between specialties?
 - b. Is the change in the effect associated with specialty, total sample size, number of studies, in-field specific ranking of the journal, the number of citations, the year, or the number of studies?
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Table 1: Research questions and hypotheses. A registered study protocol is available at osf.io/3a28k.

Specialty	Cochrane review Groups	
1 Anaesthesia & Pain (280)	Anaesthesia (116)	Pain, Palliative and Supportive Care (164)
2 Emergency & Trauma (288)	Bone, Joint and Muscle Trauma (115) Emergency and Critical Care (78)	Injuries (95)
3 Gastroenterology (266)	Colorectal (106) Inflammatory Bowel Disease (86)	Upper GI and Pancreatic Diseases (74)
4 Genetics & Endocrinology (220)	Cystic Fibrosis and Genetic Disorders (122)	Metabolic and Endocrine Disorders (98)
5 Gynaecology & Urology (416)	Fertility Regulation (72) Gynaecology and Fertility (207)	Incontinence (79) Urology (58)
6 Heart & Hypertension (354)	Heart (160) Hypertension (63)	Vascular (131)
7 Hepato-Biliary (177)	Hepato-Biliary (177)	
8 Infectious Diseases (233)	HIV/AIDS (73) Infectious Diseases (139)	Sexually Transmitted Infections (21)
9 Kidney and Transplant (177)	Kidney and Transplant (177)	
10 Lungs (443)	Acute Respiratory Infections (132)	Airways (311)
11 Neonatal (328)	Neonatal (328)	
12 Neurology (421)	Epilepsy (68) Movement Disorders (44) Multiple Sclerosis and Rare Diseases of the CNS (42)	Neuromuscular (88) Stroke (179)
13 Oncology (313)	Breast Cancer (53) Childhood Cancer (24) Gynaecological, Neuro-oncology and Orphan Cancer (146)	Haematological Malignancies (65) Lung Cancer (25)
14 Oral Health, Eyes & ENT (325)	ENT (73) Eyes and Vision (127)	Oral Health (125)
15 Pregnancy and Childbirth (503)	Pregnancy and Childbirth (503)	
16 Psychiatry & Mental Health (723)	Common Mental Disorders (169) Dementia and Cognitive Improvement (105) Developmental, Psychosocial and Learning Problems (112)	Drugs and Alcohol (64) Schizophrenia (208) Tobacco Addiction (65)
17 Public Health & Work (164)	Consumers and Communication (46) Effective Practice and Organisation of Care (58)	Public Health (21) Work (39)
18 Skin & Wounds (212)	Skin (83)	Wounds (129)
19 Spine and Muscles (232)	Back and Neck (55)	Musculoskeletal (177)

Table 2: Assignment of the 53 Cochrane review groups into 19 medical specialties with the number of reviews in parenthesis. Assignment was based on thematic overlap, e.g. various cancer groups into “oncology”, various neurological conditions into “neurology”, etc. Very large groups (e.g., pregnancy & childbirth, and neonatal) were not further grouped.

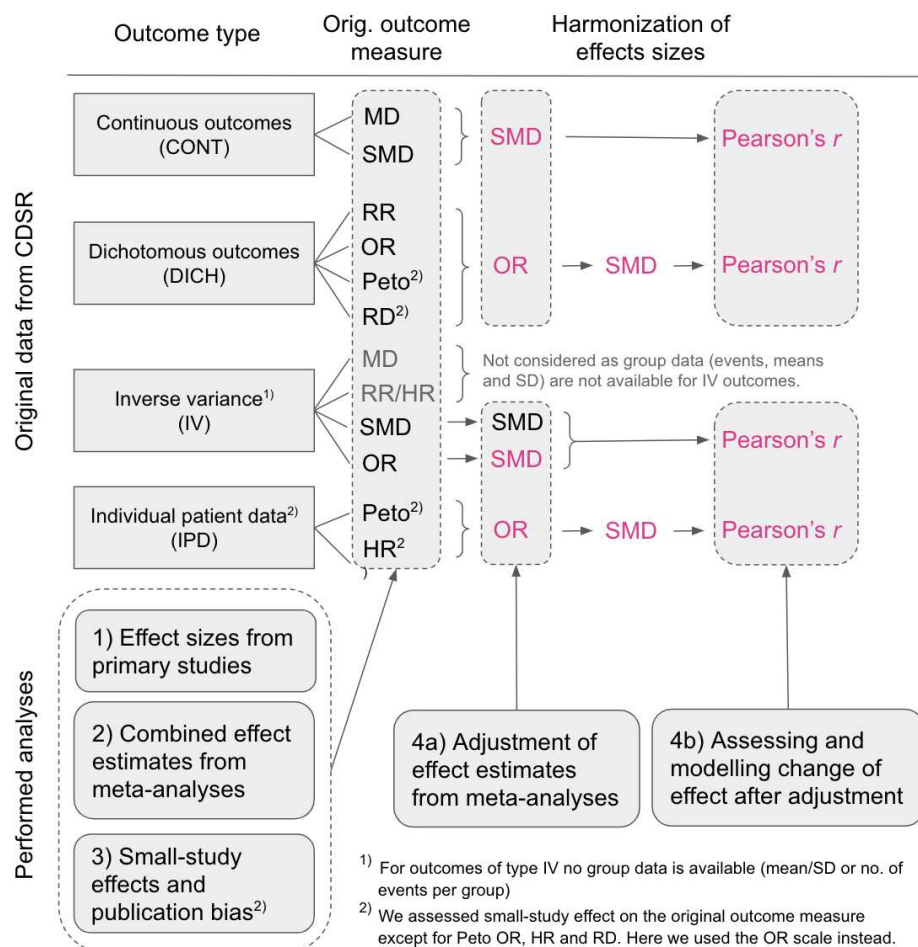


Figure 1: Harmonization of effect estimates from primary studies and meta-analyses and associated statistical analyses 1-4. Effect estimates on a different scale than reported in Cochrane Reviews are highlighted (magenta). Analyses 1-3 of the results section were based on the original effect measure used by the systematic reviewers. An exception was in the assessment of small-study effects: we used odds ratios (OR) instead of Peto odds ratios, hazard ratios (HR) and risk differences (RD). The bias-adjustment of the treatment effect estimates (4a) were based on standardized mean differences (SMD) or ORs for continuous and dichotomous outcomes, respectively. The extent of bias adjustment (4b) across all meta-analyses and specialties was assessed on the Pearson's *r* scale by converting the unadjusted and bias-adjusted effect estimate.

1 Effect sizes from primary studies

	No. of primary studies	Median study size (IQR)	Median no. of outcomes (IRQ)	Median effect size r (IRQ)
Psychiatry & Mental Health	8091 (14.2%)	76 (40-193)	3 (1-5)	0.15 (0.06-0.29)
Pregnancy & Childbirth	5031 (8.8%)	109 (60-225)	4 (2-8)	0.15 (0.06-0.30)
Gynaecology & Urology	4736 (8.3%)	90 (49-180)	3 (2-5)	0.18 (0.07-0.33)
Anaesthesia & Pain	4686 (8.2%)	60 (40-107)	2 (1-5)	0.23 (0.10-0.39)
Heart & Hypertension	4250 (7.4%)	101 (50-236)	3 (2-5)	0.18 (0.07-0.32)
Lungs	4177 (7.3%)	83 (37-235)	3 (2-5)	0.15 (0.06-0.29)
Gastroenterology	3464 (6.1%)	95 (50-200)	2 (1-4)	0.19 (0.08-0.34)
Emergency & Trauma	3281 (5.7%)	65 (39-138)	3 (1-5)	0.18 (0.07-0.34)
Neurology	2661 (4.7%)	60 (30-132)	3 (1-5)	0.17 (0.07-0.31)
Oral Health, Eyes & ENT	2563 (4.5%)	60 (38-120)	2 (1-4)	0.20 (0.08-0.37)
Kidney & Transplant	2554 (4.5%)	60 (34-124)	4 (2-6)	0.18 (0.07-0.32)
Oncology	2508 (4.4%)	123 (60-292)	3 (2-6)	0.15 (0.06-0.30)
Spine & Muscles	2457 (4.3%)	63 (37-120)	3 (2-6)	0.16 (0.07-0.31)
Skin & Wounds	2438 (4.3%)	73 (40-147)	2 (1-3)	0.23 (0.10-0.42)
Infectious Diseases	2212 (3.9%)	129 (61-357)	3 (1-5)	0.15 (0.06-0.32)
Public Health & Work	1986 (3.5%)	116 (54-279)	2 (1-3)	0.13 (0.05-0.25)
Hepato-Biliary	1976 (3.5%)	62 (35-110)	3 (1-4)	0.20 (0.08-0.35)
Genetics & Endocrinology	1749 (3.1%)	64 (32-151)	3 (2-6)	0.16 (0.06-0.31)
Neonatal	1600 (2.8%)	60 (35-115)	4 (2-8)	0.15 (0.06-0.30)
Total	62420 (100%)			
Unique studies	57162 (92%)	91 (46-212)	3 (2-6)	0.17 (0.07-0.32)

Table 3: Descriptives of efficacy outcomes of 57,162 primary studies for 19 medical specialties.

	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2019	Year missing	Total	%
Psychiatry & Mental Health	4	0	0	25	131	395	889	1856	3215	1508	68	8091	13.0
Pregnancy & Childbirth	1	2	2	26	109	256	704	1264	1612	1051	4	5031	8.1
Gynaecology & Urology	0	0	0	1	30	109	411	1144	1952	1079	10	4736	7.6
Anaesthesia & Pain	0	0	0	0	15	84	457	1405	1754	967	4	4686	7.5
Heart & Hypertension	0	0	0	11	35	134	498	1142	1622	745	63	4250	6.8
Lungs	3	4	8	32	76	214	589	1228	1379	588	56	4177	6.7
Gastroenterology	0	0	0	1	4	103	477	964	1337	570	8	3464	5.5
Emergency & Trauma	0	0	0	2	11	73	341	1007	1275	572	0	3281	5.3
Neurology	0	0	0	3	16	52	245	560	1041	722	22	2661	4.3
Oral Health, Eyes & ENT	0	0	0	7	66	84	258	526	997	613	12	2563	4.1
Kidney & Transplant	0	0	0	0	3	54	247	715	1073	458	4	2554	4.1
Oncology	0	0	0	0	4	83	311	629	884	508	89	2508	4.0
Spine & Muscles	0	0	0	3	15	60	249	615	1114	398	3	2457	3.9
Skin & Wounds	0	0	0	0	9	80	296	691	879	481	2	2438	3.9
Infectious Diseases	0	2	0	15	64	94	271	693	764	255	54	2212	3.5
Public Health & Work	0	0	1	0	8	35	131	380	883	548	0	1986	3.2
Hepato-Biliary	0	0	0	0	2	32	184	650	739	369	0	1976	3.2
Genetics & Endocrinology	1	0	0	0	3	21	143	410	824	340	7	1749	2.8
Neonatal	0	0	0	7	16	51	235	472	483	336	0	1600	2.6
Total	9	8	11	133	617	2014	6936	16351	23827	12108	406	62420	100.0
%	0.0	0.0	0.0	0.2	1.0	3.2	11.1	26.2	38.2	19.4	0.7	100.0	

Table 4: Number of primary studies by publication decade and specialty.

	median number of citations (IQR)	median number of citations per year (IQR)	median SJR of journal (IQR)
Spine & Muscles	98 (43-198)	5.92 (2.46-11.56)	1.74 (1.02-2.77)
Genetics & Endocrinology	88 (32-200)	5.67 (2.00-13.33)	2.13 (1.20-3.92)
Public Health & Work	81 (38-158)	5.73 (2.74-11.14)	1.51 (0.98-2.77)
Gastroenterology	78 (27-179)	4.38 (1.48-11.14)	2.14 (1.06-6.05)
Emergency & Trauma	76 (31-174)	4.50 (1.62-10.63)	1.48 (0.89-3.21)
Neurology	76 (29-181)	5.52 (1.90-11.88)	1.69 (0.96-3.47)
Oncology	74 (27-182)	4.16 (1.46-12.10)	2.46 (1.27-6.07)
Heart & Hypertension	67 (26-160)	3.85 (1.50-9.29)	1.76 (0.99-6.79)
Psychiatry & Mental Health	67 (24-157)	4.27 (1.27-9.55)	1.82 (0.99-2.78)
Lungs	63 (26-136)	3.14 (1.17-7.52)	2.54 (1.15-3.70)
Hepato-Biliary	59 (19-136)	3.22 (0.96-7.69)	1.90 (1.05-5.10)
Infectious Diseases	59 (23-118)	3.07 (1.00-6.96)	1.90 (1.18-3.26)
Neonatal	57 (24-116)	3.04 (1.25-6.75)	1.22 (1.01-3.00)
Anaesthesia & Pain	54 (21-121)	3.57 (1.40-7.96)	1.24 (0.72-1.71)
Oral Health, Eyes & ENT	53 (24-109)	3.62 (1.30-7.30)	1.22 (0.72-2.14)
Skin & Wounds	46 (20-100)	2.68 (0.97-6.19)	1.16 (0.64-1.98)
Kidney & Transplant	46 (17-116)	2.76 (0.89-6.88)	1.15 (0.52-2.48)
Gynaecology & Urology	45 (16-100)	3.05 (1.00-6.43)	1.97 (0.86-2.57)
Pregnancy & Childbirth	37 (13-84)	2.20 (0.73-5.06)	1.39 (0.76-2.69)

Table 5: Descriptives of publication metrics for primary studies, the number of citations and citations per year, and the SJR (SCImago Journal Rank) indicator.

specialty	efficacy	safety
Skin & Wounds	0.36 (0.35-0.38)	0.16 (0.14-0.18)
Anaesthesia & Pain	0.36 (0.36-0.37)	0.19 (0.18-0.21)
Spine & Muscles	0.34 (0.33-0.35)	0.17 (0.16-0.19)
Public Health & Work	0.34 (0.33-0.35)	0.10 (0.06-0.14)
Genetics & Endocrinology	0.33 (0.32-0.34)	0.14 (0.13-0.16)
Heart & Hypertension	0.33 (0.32-0.33)	0.17 (0.15-0.20)
Oral Health, Eyes & ENT	0.32 (0.31-0.33)	0.14 (0.12-0.18)
Infectious Diseases	0.30 (0.29-0.31)	0.18 (0.17-0.20)
Lungs	0.28 (0.28-0.29)	0.12 (0.11-0.13)
Gynaecology & Urology	0.28 (0.28-0.29)	0.23 (0.22-0.25)
Gastroenterology	0.28 (0.27-0.29)	0.15 (0.13-0.16)
Psychiatry & Mental Health	0.28 (0.27-0.28)	0.20 (0.19-0.21)
Hepato-Biliary	0.27 (0.26-0.28)	0.14 (0.12-0.16)
Oncology	0.26 (0.26-0.27)	0.29 (0.27-0.31)
Neurology	0.26 (0.25-0.26)	0.25 (0.23-0.27)
Emergency & Trauma	0.23 (0.23-0.24)	0.08 (0.07-0.10)
Kidney & Transplant	0.23 (0.22-0.24)	0.15 (0.13-0.17)
Pregnancy & Childbirth	0.20 (0.20-0.21)	0.23 (0.20-0.26)
Neonatal	0.18 (0.18-0.19)	0.12 (0.07-0.19)

Table 6: Proportion (and 95%-CI) of reported significant effects ($p < 0.05$) in primary studies for efficacy and safety outcomes.

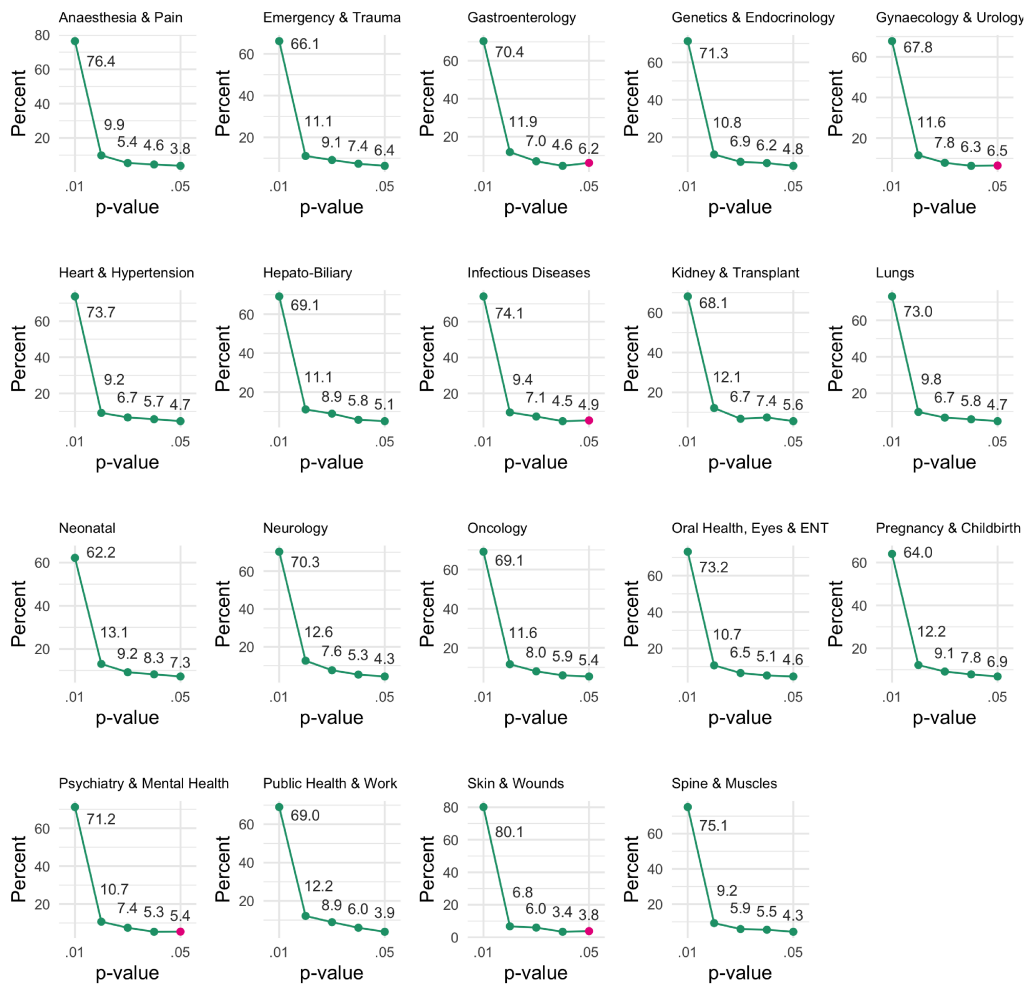


Figure 2: Percent of significant effects across specialties (p-curve). Five medical specialties showed a very small increase in the number of significant effects between $.04 \leq p < .05$ (highlighted red).

	OR	95%-CI	z-value	p-value
Specialty: Anaesthesia & Pain	1.93	from 1.79 to 2.08	17.10	< 0.0001
Skin & Wounds	1.56	from 1.40 to 1.75	7.86	< 0.0001
Public Health & Work	1.39	from 1.24 to 1.56	5.78	< 0.0001
Oral Health, Eyes & ENT	1.34	from 1.21 to 1.49	5.46	< 0.0001
Spine & Muscles	1.33	from 1.21 to 1.47	5.87	< 0.0001
Genetics & Endocrinology	1.33	from 1.18 to 1.49	4.80	< 0.0001
Gynaecology & Urology	1.02	from 0.94 to 1.10	0.44	0.66
Infectious Diseases	1.01	from 0.90 to 1.14	0.23	0.82
Heart & Hypertension	0.97	from 0.89 to 1.05	-0.86	0.39
Psychiatry & Mental Health	0.94	from 0.88 to 0.99	-2.17	0.03
Emergency & Trauma	0.93	from 0.85 to 1.02	-1.62	0.11
Lungs	0.89	from 0.82 to 0.96	-2.84	0.005
Gastroenterology	0.88	from 0.80 to 0.96	-2.71	0.007
Neurology	0.83	from 0.76 to 0.92	-3.53	0.0004
Oncology	0.78	from 0.70 to 0.86	-4.75	< 0.0001
Hepato-Biliary	0.77	from 0.69 to 0.87	-4.41	< 0.0001
Kidney & Transplant	0.75	from 0.68 to 0.83	-5.80	< 0.0001
Neonatal	0.63	from 0.57 to 0.71	-8.24	< 0.0001
Pregnancy & Childbirth	0.62	from 0.58 to 0.67	-13.65	< 0.0001
Journal ranking: SJR Q4	1.52	from 1.32 to 1.75	5.82	< 0.0001
Q3	1.41	from 1.29 to 1.54	7.42	< 0.0001
Q2	1.26	from 1.18 to 1.34	7.27	< 0.0001
Study size (log2)	1.15	from 1.14 to 1.17	23.29	< 0.0001
Citations per year (log2)	1.07	from 1.06 to 1.08	10.97	< 0.0001
Publication year (per 10 years)	0.94	from 0.92 to 0.96	-5.21	< 0.0001
Study is an RCT	0.90	from 0.86 to 0.94	-5.02	< 0.0001

Table 7: Regression analysis of variables associated with the statistical significance of a reported effect size in published primary studies.

2 Combined effect estimates from meta-analyses

	Number of meta-analyses	Median sample size (IQR)	Median no. of studies (IRQ)	Median effect size r (IRQ)
Psychiatry & Mental Health	13906 (14.1%)	428 (187-984)	3 (2-6)	0.13 (0.05-0.23)
Pregnancy & Childbirth	11454 (11.6%)	903 (341-2546)	3 (2-6)	0.09 (0.04-0.20)
Lungs	7071 (7.1%)	546 (192-1405)	3 (2-6)	0.12 (0.05-0.22)
Heart & Hypertension	6825 (6.9%)	1073 (367-4179)	4 (3-8)	0.10 (0.04-0.22)
Oncology	6758 (6.8%)	696 (293-1740)	4 (2-7)	0.11 (0.05-0.21)
Gynaecology & Urology	5779 (5.8%)	466 (214-1136)	3 (2-5)	0.13 (0.05-0.27)
Neurology	5586 (5.6%)	604 (207-1690)	3 (2-5)	0.11 (0.05-0.22)
Anaesthesia & Pain	4958 (5.0%)	463 (210-1073)	4 (2-7)	0.18 (0.09-0.32)
Neonatal	4670 (4.7%)	348 (172-840)	3 (2-5)	0.09 (0.04-0.20)
Kidney & Transplant	4562 (4.6%)	331 (154-918)	3 (2-5)	0.12 (0.05-0.24)
Emergency & Trauma	4174 (4.2%)	465 (207-1156)	4 (2-7)	0.12 (0.05-0.26)
Spine & Muscles	4013 (4.1%)	407 (198-861)	3 (2-4)	0.15 (0.07-0.28)
Hepato-Biliary	3865 (3.9%)	360 (180-846)	4 (2-8)	0.13 (0.06-0.25)
Gastroenterology	3728 (3.8%)	506 (230-1346)	4 (2-7)	0.14 (0.06-0.25)
Genetics & Endocrinology	3098 (3.1%)	465 (200-1200)	3 (2-6)	0.12 (0.05-0.23)
Infectious Diseases	3067 (3.1%)	854 (331-2536)	3 (2-5)	0.13 (0.05-0.27)
Oral Health, Eyes & ENT	2328 (2.4%)	310 (144-682)	3 (2-5)	0.16 (0.07-0.32)
Public Health & Work	1620 (1.6%)	652 (272-1680)	3 (2-6)	0.10 (0.04-0.18)
Skin & Wounds	1504 (1.5%)	419 (180-1022)	3 (2-5)	0.20 (0.08-0.37)
ACROSS ALL SPECIALTIES	98966 (100%)	523 (220-1395)	3 (2-6)	0.12 (0.05-0.24)

Table 8: Descriptives of reported combined effect sizes from meta-analyses.

specialty	combined effect
Anaesthesia & Pain	0.49 (0.47-0.50)
Spine & Muscles	0.43 (0.42-0.45)
Skin & Wounds	0.41 (0.39-0.44)
Genetics & Endocrinology	0.40 (0.39-0.42)
Infectious Diseases	0.39 (0.37-0.41)
Heart & Hypertension	0.38 (0.37-0.39)
Lungs	0.37 (0.36-0.38)
Oral Health, Eyes & ENT	0.36 (0.34-0.37)
Gynaecology & Urology	0.34 (0.33-0.36)
Gastroenterology	0.34 (0.33-0.36)
Psychiatry & Mental Health	0.34 (0.33-0.35)
Neurology	0.34 (0.32-0.35)
Public Health & Work	0.33 (0.31-0.36)
Oncology	0.32 (0.31-0.33)
Emergency & Trauma	0.30 (0.29-0.31)
Hepato-Biliary	0.29 (0.28-0.30)
Kidney & Transplant	0.29 (0.27-0.30)
Pregnancy & Childbirth	0.24 (0.23-0.25)
Neonatal	0.21 (0.20-0.22)

Table 9: Proportion (and 95%-CI) of statistically significant combined effect estimates ($p < 0.05$) across medical specialties.

	OR	95%-CI	z-value	p-value
Specialty: Anaesthesia & Pain	2.46	from 1.97 to 3.06	8.00	< 0.0001
Spine & Muscles	1.52	from 1.18 to 1.97	3.19	0.001
Genetics & Endocrinology	1.47	from 1.10 to 1.95	2.60	0.009
Skin & Wounds	1.38	from 1.02 to 1.88	2.06	0.039
Oral Health, Eyes & ENT	1.32	from 1.03 to 1.70	2.18	0.03
Gynaecology & Urology	1.19	from 0.97 to 1.44	1.70	0.089
Lungs	1.08	from 0.89 to 1.30	0.78	0.44
Infectious Diseases	1.03	from 0.79 to 1.34	0.22	0.83
Gastroenterology	1.02	from 0.81 to 1.29	0.20	0.84
Psychiatry & Mental Health	0.98	from 0.84 to 1.15	-0.22	0.82
Public Health & Work	0.96	from 0.69 to 1.33	-0.26	0.79
Neurology	0.90	from 0.73 to 1.11	-1.03	0.31
Heart & Hypertension	0.86	from 0.70 to 1.05	-1.48	0.14
Kidney & Transplant	0.80	from 0.61 to 1.05	-1.63	0.10
Hepato-Biliary	0.78	from 0.60 to 1.02	-1.85	0.065
Oncology	0.77	from 0.60 to 0.98	-2.17	0.03
Emergency & Trauma	0.66	from 0.53 to 0.84	-3.46	0.0005
Neonatal	0.57	from 0.46 to 0.72	-4.69	< 0.0001
Pregnancy & Childbirth	0.57	from 0.47 to 0.68	-6.16	< 0.0001
Median SJR (log2)	1.01	from 0.99 to 1.03	0.67	0.51
Sample size (log2)	1.08	from 1.07 to 1.10	9.12	< 0.0001
Median citations per year (log2)	1.04	from 1.02 to 1.06	4.55	< 0.0001
Review year (per 10 years)	0.94	from 0.84 to 1.06	-0.98	0.33
Number of studies	1.60	from 1.56 to 1.65	32.47	< 0.0001

Table 10: Regression analysis of variables associated with the statistical significance of a combined effect estimate from a meta-analysis.

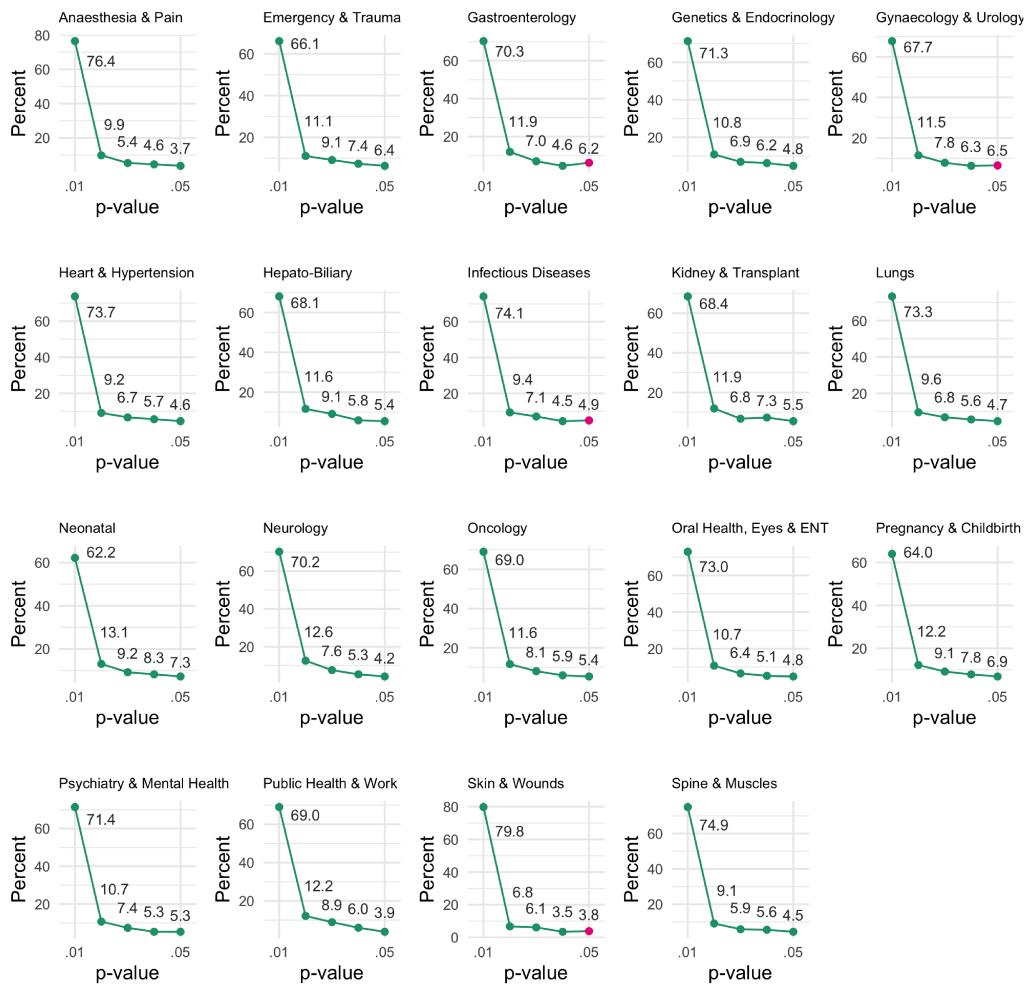


Figure 3: Percent of statistically significant combined effect estimates from meta-analyses across medical specialties (p-curve). Four medical specialties showed a very small increase in the number of significant effects between $.04 \leq p < .05$ (highlighted red).

3 Funnel plot asymmetry and publication bias

	estimate	95%-CI	t-value	p-value
Specialty: Infectious Diseases	0.338	from 0.016 to 0.659	2.06	0.04
Anaesthesia & Pain	0.299	from 0.118 to 0.480	3.24	0.001
Oral Health, Eyes & ENT	0.127	from -0.253 to 0.506	0.65	0.51
Kidney & Transplant	0.112	from -0.129 to 0.353	0.91	0.36
Neonatal	0.067	from -0.232 to 0.366	0.44	0.66
Gynaecology & Urology	0.065	from -0.147 to 0.276	0.60	0.55
Spine & Muscles	0.054	from -0.252 to 0.361	0.35	0.73
Pregnancy & Childbirth	0.022	from -0.157 to 0.201	0.24	0.81
Heart & Hypertension	0.002	from -0.161 to 0.165	0.02	0.98
Neurology	-0.002	from -0.201 to 0.196	-0.02	0.98
Hepato-Biliary	-0.037	from -0.252 to 0.178	-0.34	0.73
Gastroenterology	-0.063	from -0.285 to 0.159	-0.56	0.58
Psychiatry & Mental Health	-0.063	from -0.200 to 0.073	-0.91	0.36
Oncology	-0.121	from -0.329 to 0.086	-1.15	0.25
Skin & Wounds	-0.160	from -0.525 to 0.206	-0.86	0.39
Genetics & Endocrinology	-0.161	from -0.498 to 0.176	-0.94	0.35
Lungs	-0.191	from -0.371 to -0.011	-2.08	0.037
Public Health & Work	-0.216	from -0.550 to 0.117	-1.27	0.20
Median SJR (log2)	-0.012	from -0.051 to 0.028	-0.58	0.56
Sample size (log2)	-0.038	from -0.066 to -0.010	-2.66	0.008
Median citations per year (log2)	-0.013	from -0.040 to 0.015	-0.88	0.38
Review year (per 10 years)	0.027	from -0.088 to 0.142	0.46	0.64
No. of studies (log2)	0.274	from 0.220 to 0.328	9.98	< 0.0001

Table 11: Regression analysis of variables associated with the t-score from adjustment by regression. In the medical specialties, Emergency and Trauma is closest to the mean estimate across all specialties and severs as baseline level.

	OR	95%-CI	z-value	p-value
Specialty: Infectious Diseases	3.00	from 1.26 to 7.16	2.49	0.013
Anaesthesia & Pain	1.52	from 0.92 to 2.53	1.63	0.10
Oral Health, Eyes & ENT	1.45	from 0.49 to 4.31	0.67	0.50
Skin & Wounds	1.14	from 0.39 to 3.31	0.24	0.81
Kidney & Transplant	1.13	from 0.57 to 2.25	0.35	0.72
Neonatal	1.12	from 0.47 to 2.67	0.26	0.80
Emergency & Trauma	1.09	from 0.62 to 1.90	0.30	0.77
Gynaecology & Urology	1.04	from 0.55 to 1.95	0.11	0.91
Heart & Hypertension	1.03	from 0.64 to 1.66	0.13	0.90
Pregnancy & Childbirth	0.99	from 0.59 to 1.67	-0.04	0.97
Gastroenterology	0.91	from 0.47 to 1.74	-0.29	0.78
Psychiatry & Mental Health	0.89	from 0.60 to 1.34	-0.55	0.59
Hepato-Biliary	0.83	from 0.44 to 1.55	-0.59	0.55
Spine & Muscles	0.80	from 0.31 to 2.06	-0.47	0.64
Neurology	0.78	from 0.43 to 1.43	-0.80	0.43
Genetics & Endocrinology	0.75	from 0.27 to 2.08	-0.55	0.58
Public Health & Work	0.70	from 0.24 to 2.07	-0.64	0.52
Oncology	0.65	from 0.34 to 1.23	-1.32	0.19
Lungs	0.63	from 0.35 to 1.12	-1.58	0.11
Median SJR (log2)	0.96	from 0.85 to 1.09	-0.61	0.54
Sample size (log2)	0.92	from 0.84 to 1.01	-1.80	0.072
Median citations per year (log2)	0.97	from 0.88 to 1.06	-0.77	0.44
Review year (per 10 years)	1.13	from 0.80 to 1.59	0.69	0.49
No. of studies (log2)	2.23	from 1.89 to 2.63	9.48	< 0.0001

Table 12: Regression analysis of variables associated with funnel plot asymmetry (yes/no) in a meta-analysis.

4 Adjustment of effect estimates from meta-analyses

	estimate	95%-CI	t-value	p-value
Specialty: Genetics & Endocrinology	0.023	from -0.013 to 0.060	1.24	0.21
Kidney & Transplant	0.021	from -0.006 to 0.047	1.54	0.12
Oncology	0.020	from -0.002 to 0.043	1.75	0.079
Public Health & Work	0.019	from -0.017 to 0.055	1.04	0.30
Pregnancy & Childbirth	0.015	from -0.005 to 0.034	1.47	0.14
Neonatal	0.007	from -0.026 to 0.039	0.42	0.68
Neurology	0.006	from -0.016 to 0.027	0.54	0.59
Oral Health, Eyes & ENT	0.002	from -0.039 to 0.042	0.09	0.93
Gynaecology & Urology	0.000	from -0.022 to 0.023	0.04	0.97
Psychiatry & Mental Health	0.000	from -0.015 to 0.015	0.02	0.98
Emergency & Trauma	0.000	from -0.021 to 0.021	0.02	0.99
Spine & Muscles	-0.000	from -0.033 to 0.033	-0.02	0.99
Lungs	-0.003	from -0.022 to 0.017	-0.30	0.77
Heart & Hypertension	-0.006	from -0.023 to 0.012	-0.62	0.53
Gastroenterology	-0.007	from -0.031 to 0.017	-0.59	0.56
Anaesthesia & Pain	-0.021	from -0.040 to -0.001	-2.07	0.039
Skin & Wounds	-0.027	from -0.066 to 0.012	-1.35	0.18
Infectious Diseases	-0.049	from -0.084 to -0.015	-2.80	0.005
Median SJR (log2)	0.002	from -0.003 to 0.006	0.75	0.46
Sample size (log2)	0.011	from 0.009 to 0.014	7.65	< 0.0001
Med. citations per year (log2)	-0.000	from -0.003 to 0.003	-0.06	0.95
Review year (per 10 years)	0.000	from -0.012 to 0.013	0.04	0.97
No. of studies (log2)	-0.008	from -0.013 to -0.002	-2.76	0.006

Table 13: Regression analysis of variables associated with the change of effect estimates after adjustment by regression. In the medical specialties, Hepato-Biliary is closest to the mean estimate across all specialties and serves as baseline level.

	estimate	95%-CI	t-value	p-value
Specialty: Kidney & Transplant	0.008	from 0.000 to 0.016	1.96	0.05
Genetics & Endocrinology	0.007	from -0.005 to 0.018	1.17	0.24
Skin & Wounds	0.006	from -0.006 to 0.018	0.99	0.32
Oncology	0.004	from -0.003 to 0.011	1.10	0.27
Public Health & Work	0.004	from -0.007 to 0.015	0.67	0.50
Neurology	0.003	from -0.003 to 0.010	0.96	0.33
Hepato-Biliary	0.003	from -0.005 to 0.010	0.69	0.49
Pregnancy & Childbirth	0.002	from -0.004 to 0.008	0.66	0.51
Heart & Hypertension	0.002	from -0.004 to 0.007	0.66	0.51
Psychiatry & Mental Health	0.001	from -0.004 to 0.006	0.43	0.67
Emergency & Trauma	-0.000	from -0.007 to 0.006	-0.05	0.96
Spine & Muscles	-0.002	from -0.013 to 0.009	-0.30	0.77
Gastroenterology	-0.002	from -0.010 to 0.005	-0.58	0.56
Neonatal	-0.002	from -0.013 to 0.008	-0.46	0.64
Gynaecology & Urology	-0.004	from -0.011 to 0.004	-0.98	0.33
Oral Health, Eyes & ENT	-0.004	from -0.017 to 0.008	-0.66	0.51
Anaesthesia & Pain	-0.010	from -0.016 to -0.003	-3.07	0.002
Infectious Diseases	-0.016	from -0.027 to -0.006	-2.99	0.003
Median SJR (log2)	0.002	from 0.000 to 0.003	2.38	0.017
Sample size (log2)	0.001	from 0.000 to 0.002	2.14	0.032
Med. citations per year (log2)	-0.000	from -0.001 to 0.000	-0.91	0.36
Review year (per 10 years)	0.002	from -0.002 to 0.006	1.05	0.29
No. of studies (log2)	-0.002	from -0.003 to 0.000	-1.73	0.083

Table 14: Regression analysis of variables associated with change of the effect estimates after adjustment by Copas selection model. In the medical specialties, Lungs is closest to the mean estimate across all specialties and serves as baseline level.