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Supplementary Table S1: Information of patient medication from studies included in the systematic literature review

Study	Prior Biologics, %					Prior anti-TNF therapy, %	Prior CS therapy, %	Prior IMS therapy,%					Concomitant IMS therapy,%				Concomitat CS therapy, %	Fistulizing disease, %	Prior surgery, %
	Biologics naive	Infliximab	Adalimumab	Vedolizumab	other			Thiopurines	Methotrexate	Tacrolimus	Azathioprine	other	Azathioprine	Methotrexate	Thiopurines	other			
Kopylov et al. 2020 [16]	0	100	95	NR	11	100	NR	NR	44.7	2.6	NR	NR	5.3	5.3	NR	NR	57.8	NR	44.7
Khorrami et al. 2016 [17]	6.9	90.5	93.1	NR	24.1	NR	NR	95.7	59.5	8.6	NR	4.3	NR	NR	NR	36.2	31.9	50	48.3
Hoffmann et al. 2019 [21]	5.3	NR	NR	NR	NR	94.7	63.2	NR	NR	NR	NR	NR	NR	NR	NR	5.3	35.1	NR	NR
Miyazaki et al. 2019 [48]	12.88	80.9	46.8	NR	NR	87.2	NR	NR	NR	NR	NR	NR	38.3	NR	NR	NR	NR	70.2	80.9
Biemans et al. 2020 [33]	0	NR	NR	NR	NR	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	23.5	11.8	10.6	22.4
Iborra et al. 2020 [18]	3.5	NR	NR	22	NR	96	33	NR	20	NR	71	6	NR	NR	NR	NR	NR	NR	55
Ollech et al. 2021 [24]	7.3	NR	NR	46.4	NR	92.7	60.9	51.8	45.5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Dalal et al. 2020 [25]	0	NR	NR	NR	NR	100	31.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	37.5	64.1
Forss et al. 2021 [29]	NR	NR	NR	NR	NR	NR	32	NR	NR	NR	NR	NR	NR	NR	NR	23	18	NR	NR
Plevris et al. 2021 [30]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	25.5	40.7	17.1	55.1
Takenaka et al. 2021 [47]	54	46	31	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	48	6	NR	36
Huinink et al. 2021 [32]	NR	NR	NR	64.5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	6.5	29	29	64.5
Yokoyama et al. 2021 [46]	NR	76.7	50.6	0.4	NR	NR	38.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	19.5	45.1
Wils et al. 2017 [35]	0	97	90	NR	NR	100	NR	93	66	NR	NR	NR	9	6	NR	NR	15	NR	64
Weaver et al. 2019 [26]	36	NR	NR	39	NR	64	NR	32	32	NR	NR	NR	NR	NR	NR	NR	NR	35	NR
Haider et al. 2020 [27]	8.4	NR	NR	36.4	NR	91.6	NR	NR	35.7	NR	NR	NR	NR	NR	NR	NR	NR	23.9	65.7
Wils et al. 2016 [36]	0	97	91	NR	40	100	NR	NR	NR	4	NR	16	NR	6	9	15	16	NR	62
Battat et al. 2016 [37]	1.6	NR	NR	NR	NR	98.4	NR	NR	NR	NR	NR	NR	NR	9.7	16.1	NR	30.7	27.4	51.6
Greenup et al. 2017 [38]	1	NR	NR	NR	NR	99	NR	NR	NR	NR	NR	NR	NR	NR	NR	42	26	NR	70

Hyun et al. 2022 [49]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ma et al. 2017 [39]	14.4	85.6	75	NR	92.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	42.3	38.5	24	63.5
Rowan et al. 2018 [61]	0	NR	NR	5.3	NR	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	42.1	15.8	NR	68.4
Eberl et al. 2019 [3]	14.6	85.4	66.7	43.8	NR	NR	NR	NR	NR	NR	NR	NR	NR	16.7	16.7	NR	47.9	NR	62.5
Kubesch et al. 2019 [22]	3.8	NR	NR	34.4	NR	96.2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	35.8	NR	NR
Liefferinckx et al. 2019 [40]	0.6	NR	NR	69.7	NR	99.4	NR	NR	NR	NR	NR	NR	10.5	5.4	NR	NR	44.7	40.8	59.2
Pugliese et al. 2019 [4]	4.3	NR	NR	7.1	NR	95.7	88.6	54.3	NR	NR	NR	12.9	NR	7.1	8.6	NR	32.9	NR	NR
Harris et al. 2020 [31]	2.4	82.1	82.1	42.9	11.9	3.6	NR	NR	NR	NR	NR	NR	16.7	22.6	6	NR	7.1	65	51
Thomann et al. 2020 [23]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Bermejo et al. 2022 [20]	NR	73.5	81.8	39.6	NR	NR	NR	20.7	39.6	NR	92.5	NR	NR	NR	NR	24.5	NR	41.5	73.6
Garg et al. 2022 [28]	NR	33.3	33.3	8.6	24.7	NR	47.4	NR	NR	NR	NR	NR	NR	NR	NR	14.1	49.3	NR	72.4

Hanzel et al. 2021 [42]	42.5	NR	NR	22	NR	58.5	NR	NR	NR	NR	NR	NR	7.3	2.4	NR	9.7	19.5	14.6	63.4
Straatmijer et al. 2021 [34]	0.88	NR	NR	42.9	NR	99.2	NR	19.4	6	NR	NR	NR	NR	NR	NR	NR	18.7	13.1	NR
Tursi et al. 2021 [41]	24.2	NR	NR	24.2	NR	75.8	76.3	NR	12.4	NR	50	NR	NR	NR	NR	NR	91.2	NR	NR
Yao et al. 2021 [43]	11.1	68.8	22.2	5	88.9	NR	61.1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	16.7	33.3
Yao et al. 2021 [45]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Yao et al. 2021 [44]	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chaparro et al. 2021 [51]	NR	98	NR	82	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Amiot et al. 2020 [52]	1	NR	NR	85.4	NR	99	NR	NR	24.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chiappetta et al. 2021 [55]	3	NR	NR	2	NR	29	NR	NR	NR	NR	NR	NR	22	NR	NR	NR	54	NR	NR
Fumery et al. 2021 [53]	1	NR	NR	85.4	NR	99	NR	NR	24.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dalal et al. 2021 [56]	8.3	NR	NR	NR	NR	91.7	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

IMS: immunosuppressant, *TNF:* tumor necrosis factor, *NR:* not reported, *CS:* corticosteroid

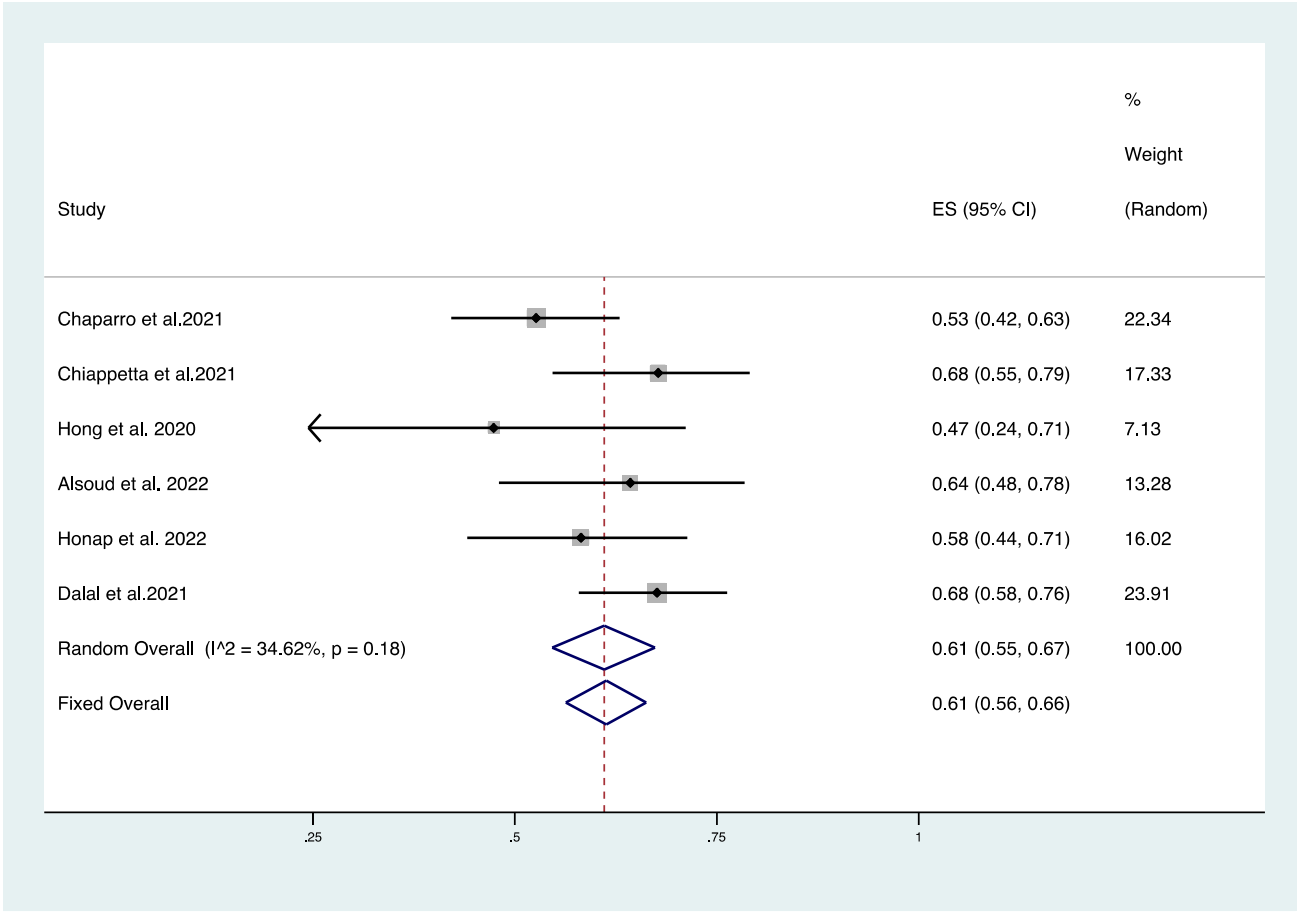
Supplementary Table S2: Cochrane Handbook for Systematic Reviews and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	1
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	2
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available,	2

		provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	2
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	2
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	2
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	2
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	2
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	2
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	2

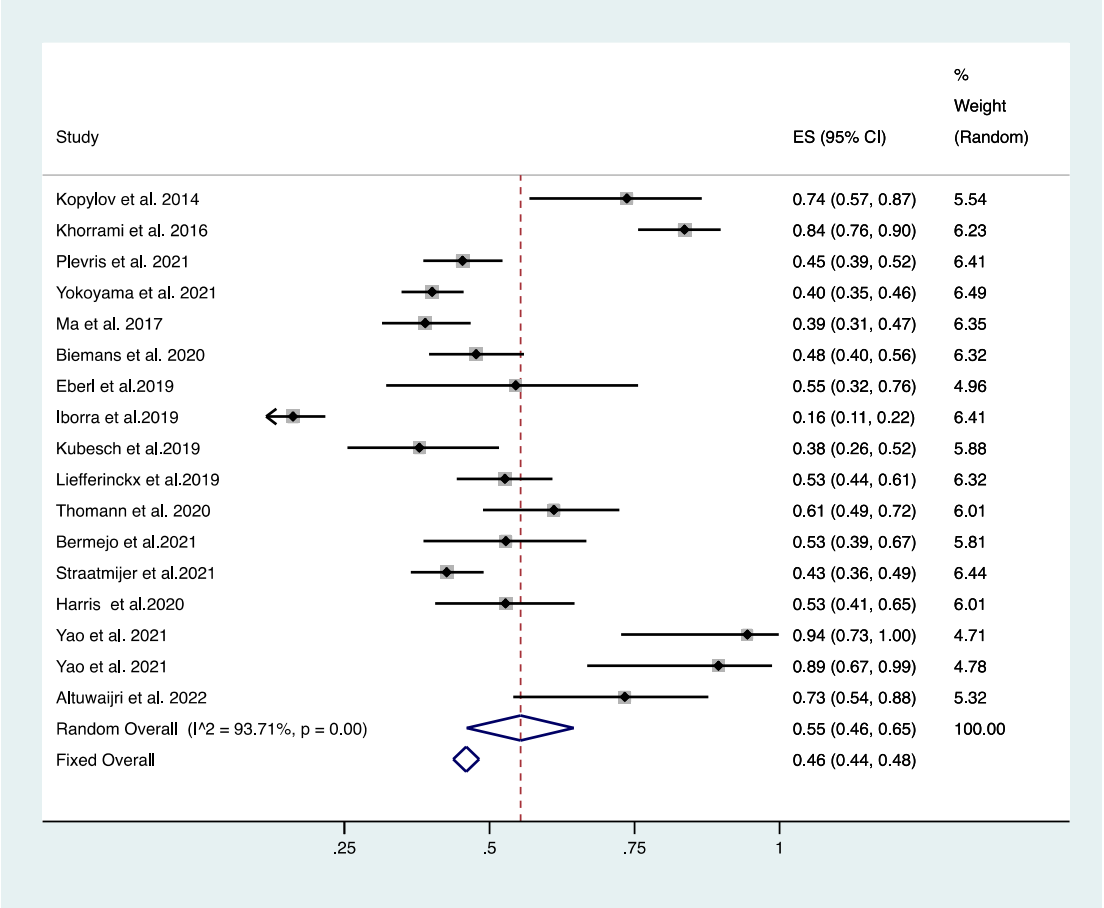
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	2
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	3

Supplementary Figure S1: Clinical response at the induction in ulcerative colitis

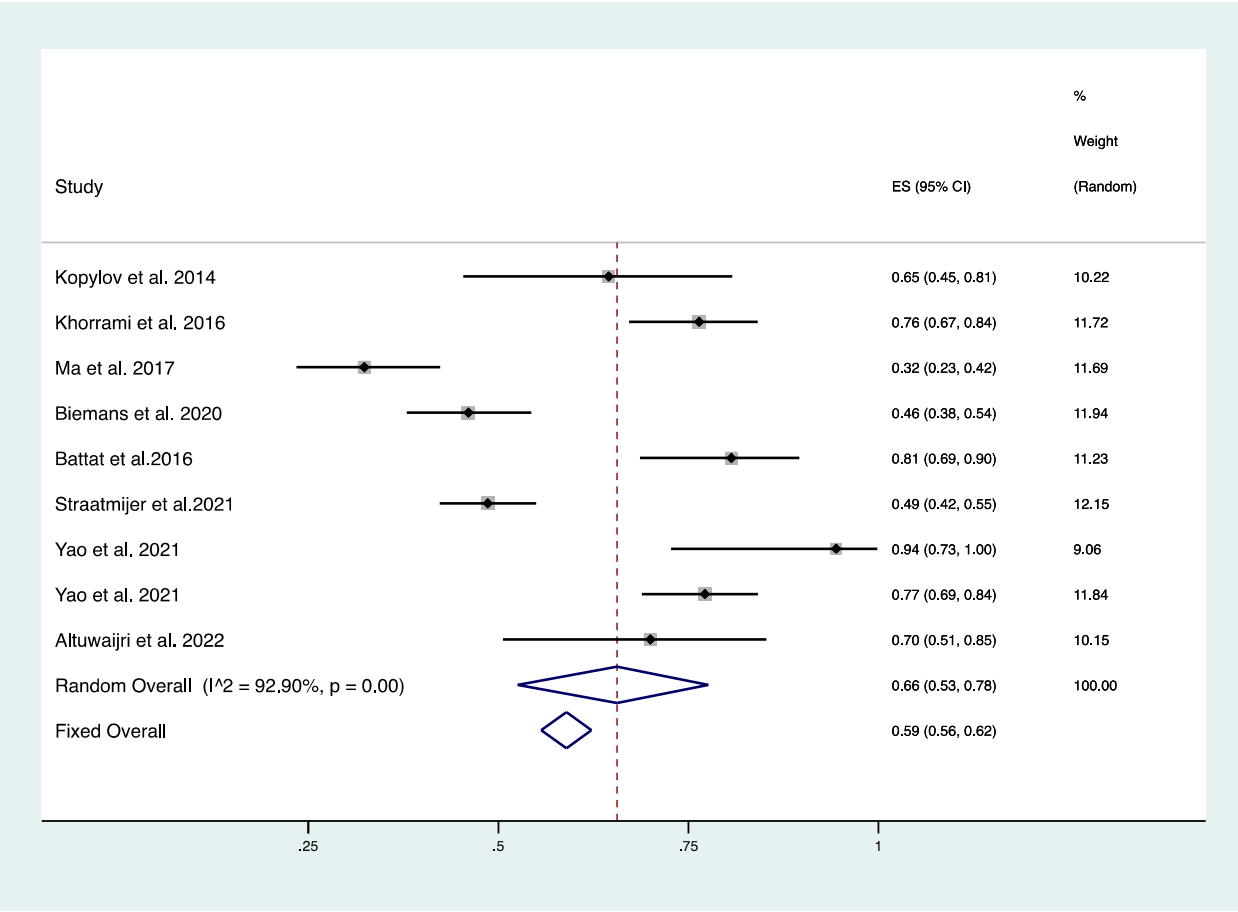


Supplementary Figure S2: Clinical response in Crohn's disease

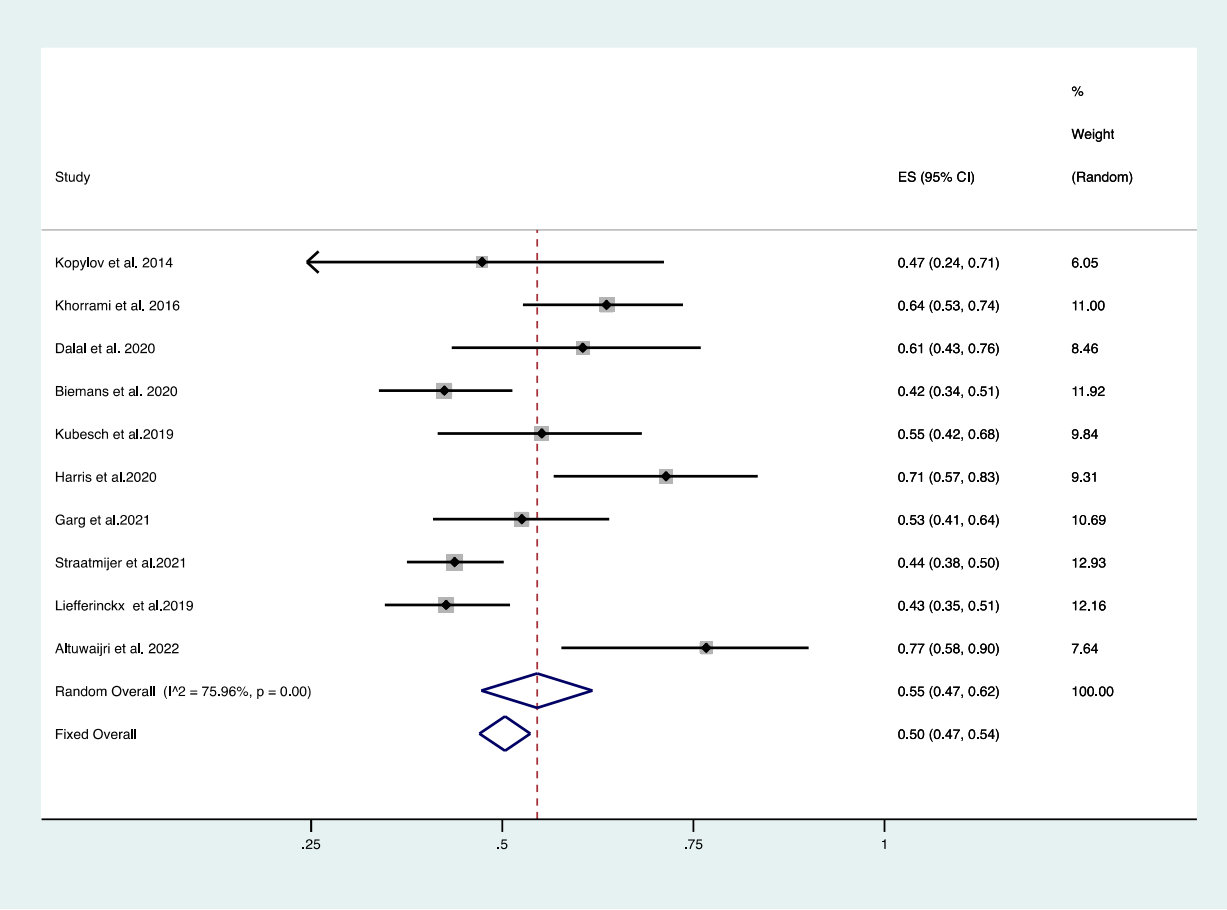
A: 12-week (induction)



B：24-week (maintenance)

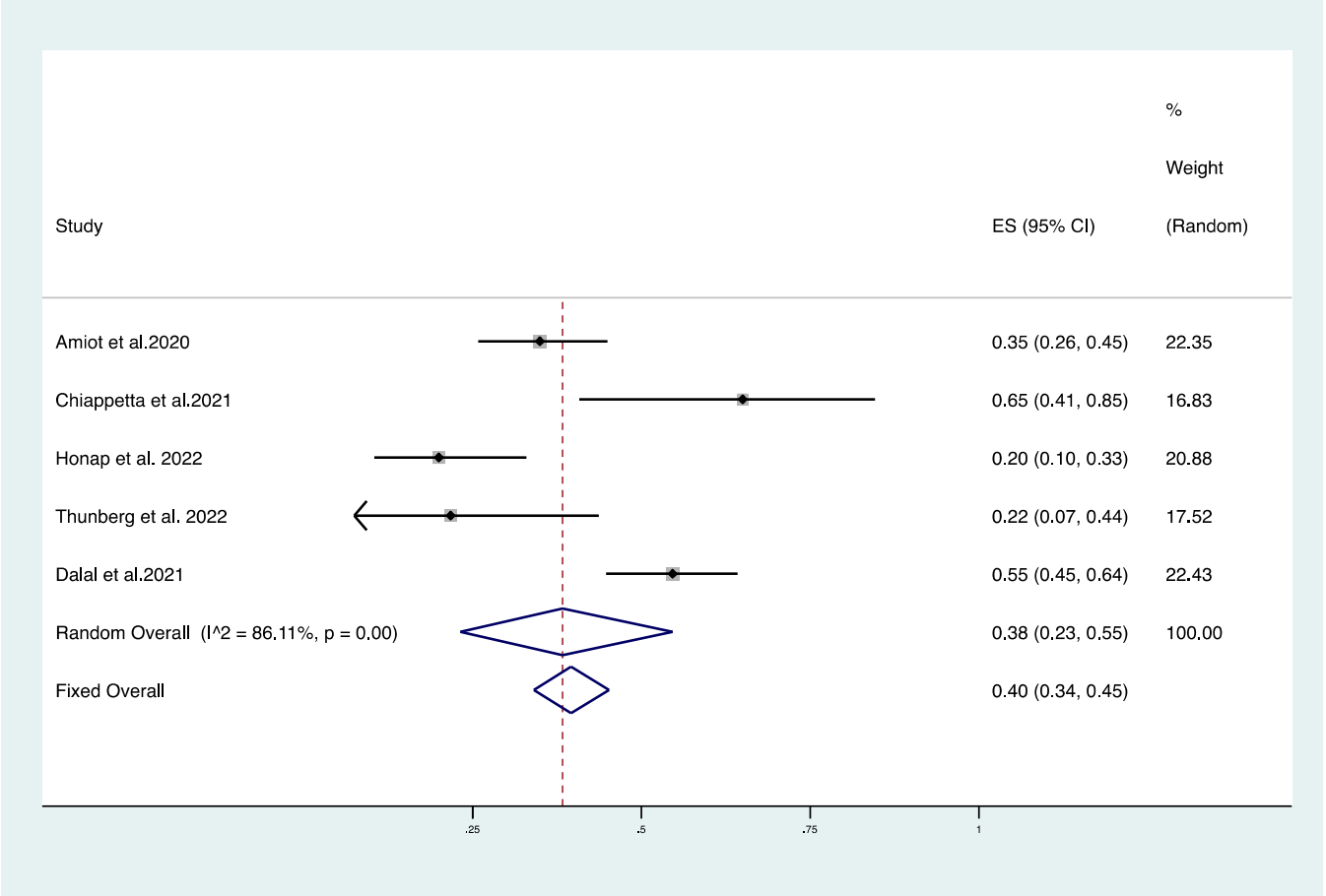


C：1-year (maintenance)

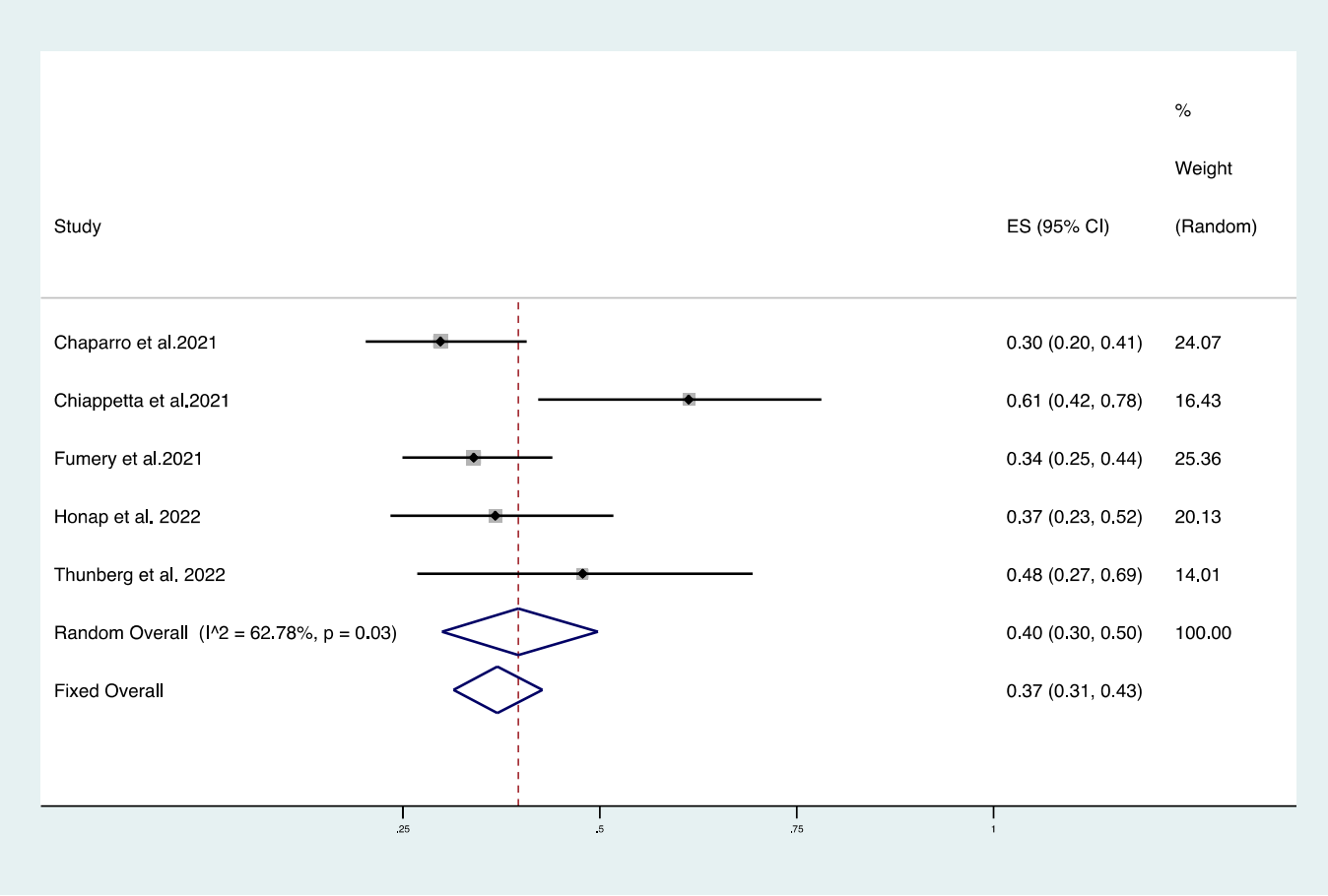


Supplementary Figure S3: CS-free remission in ulcerative colitis

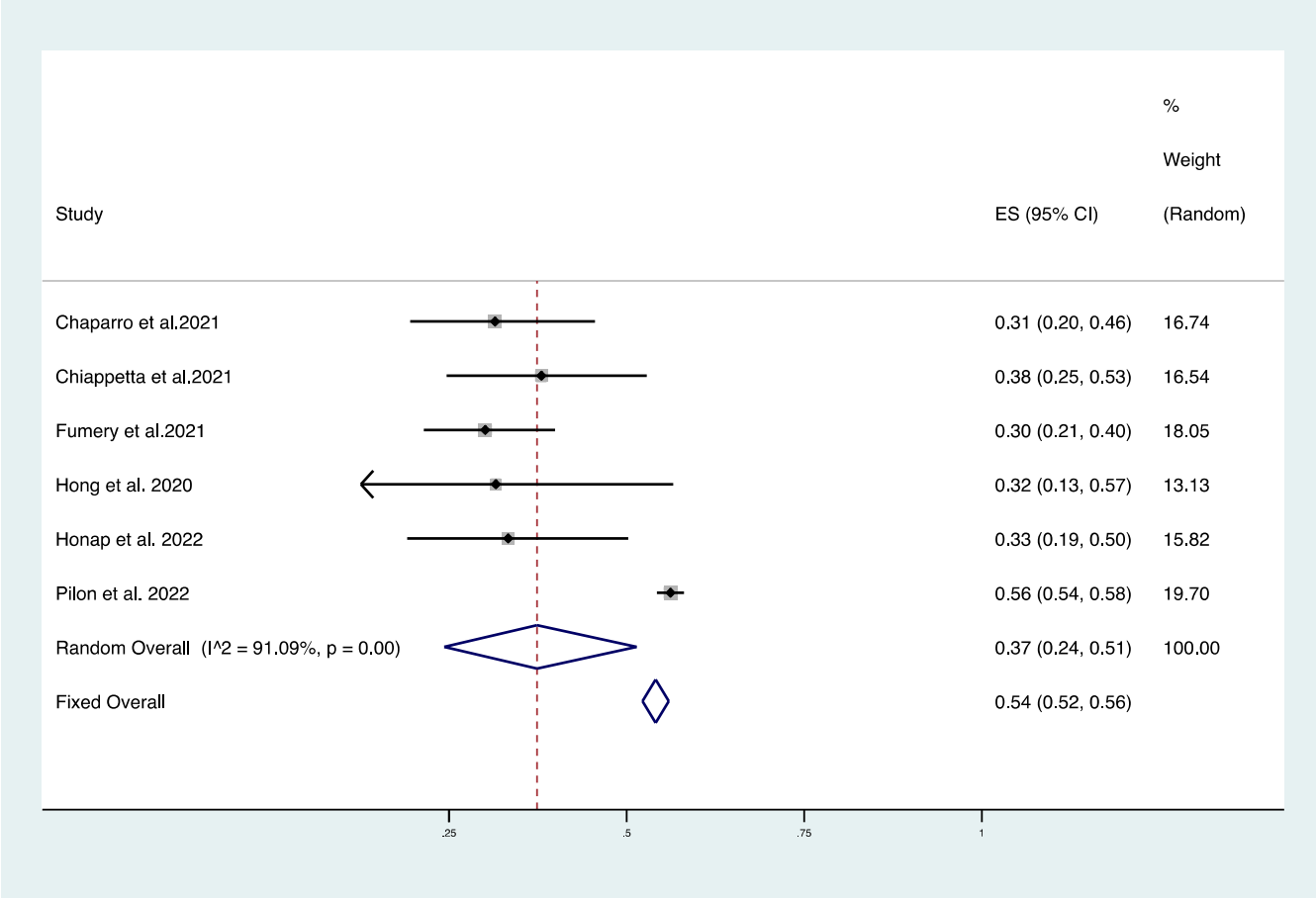
A： week 12 (induction)



B：week 24 (maintenance)

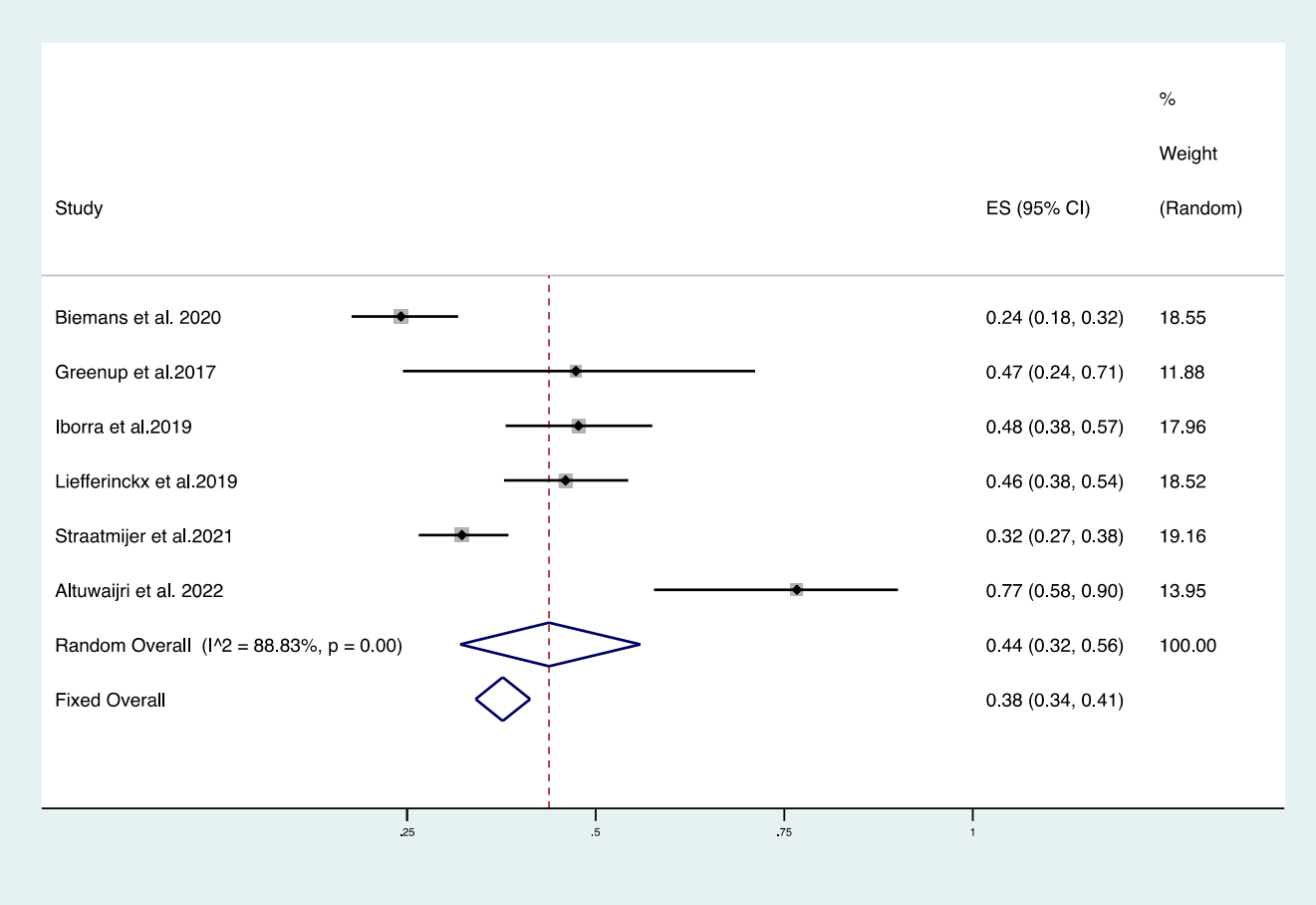


C：1-year (maintenance)

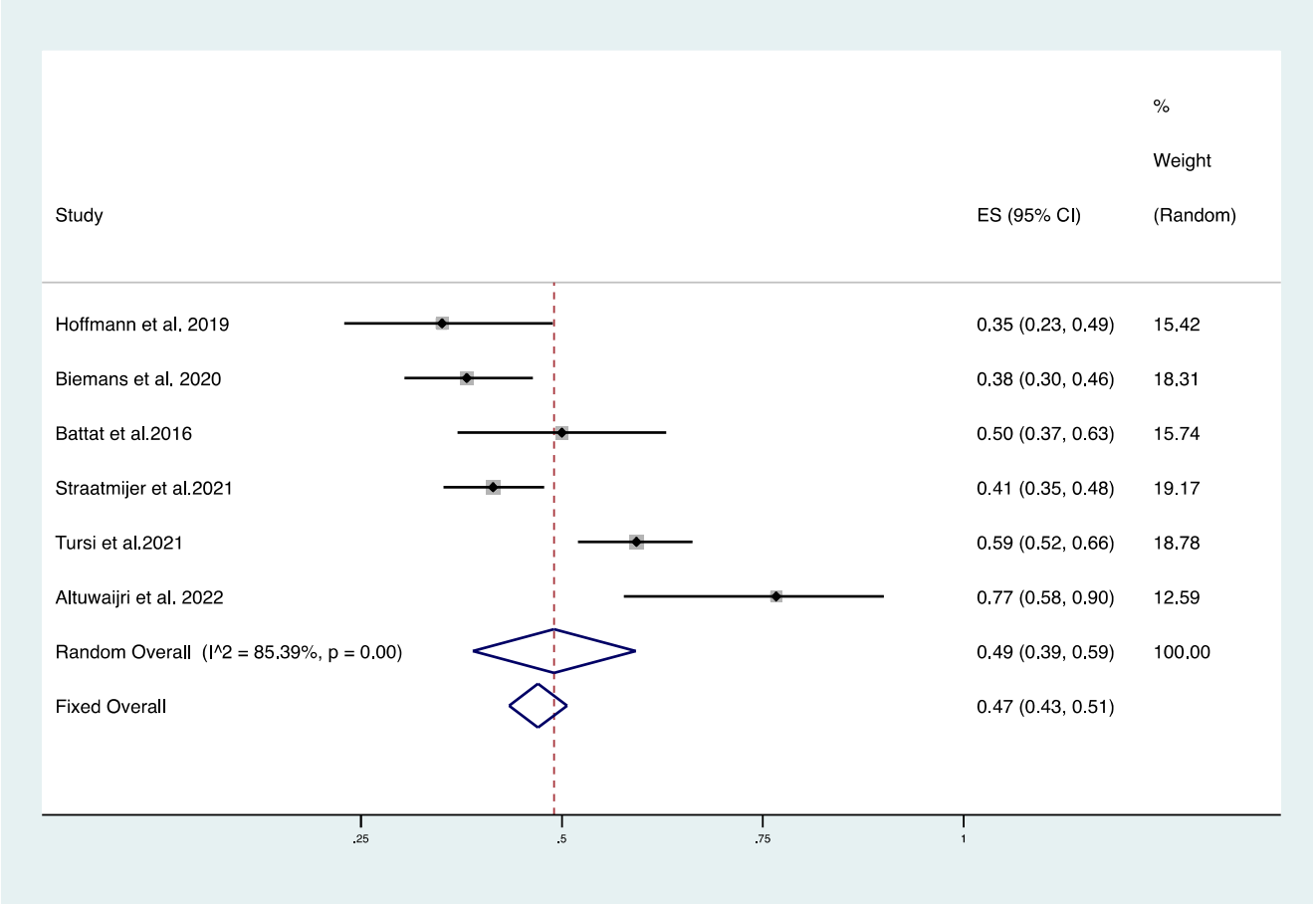


Supplementary Figure S4: CS-free remission in Crohn's disease

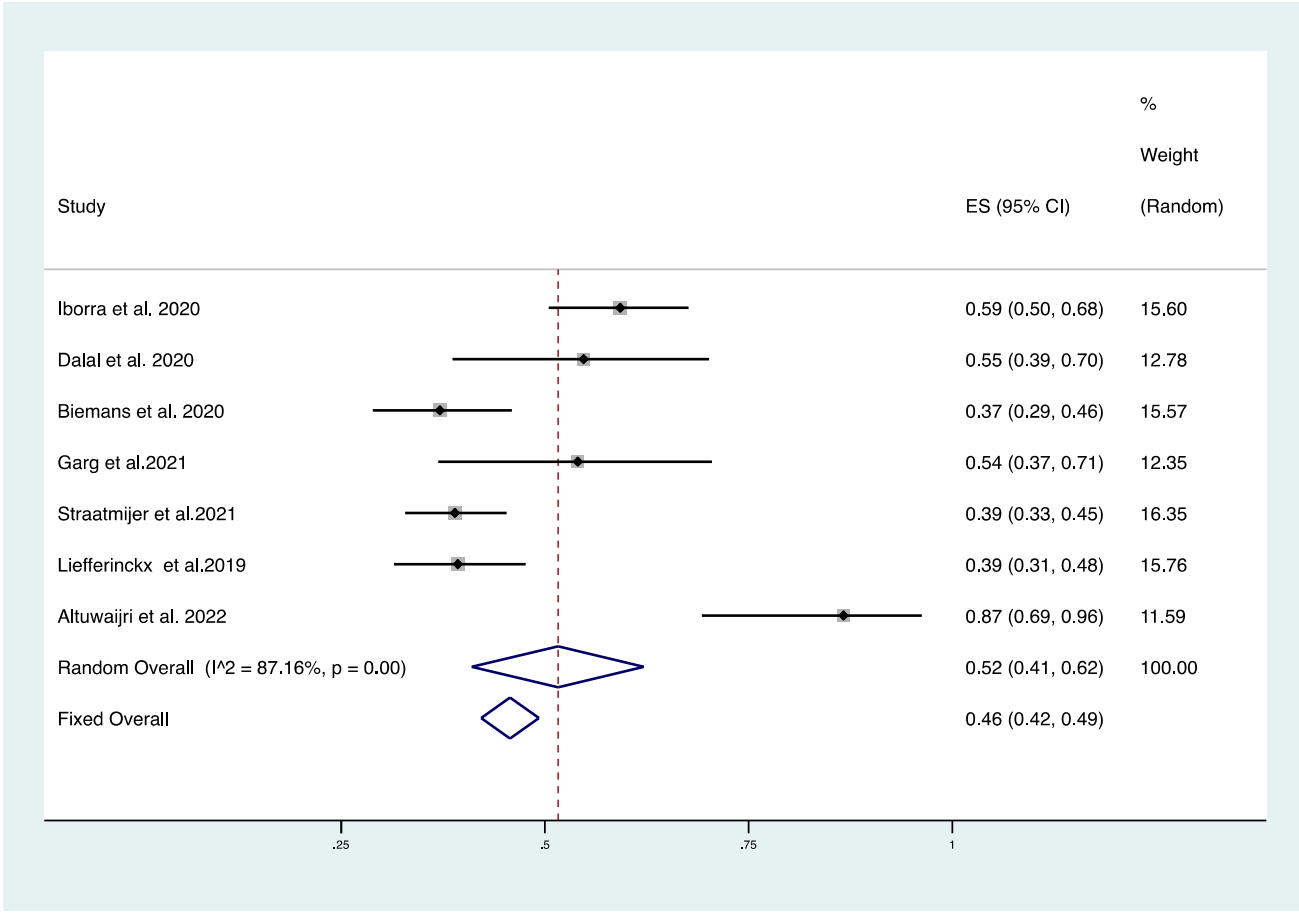
A: week 12 (induction)



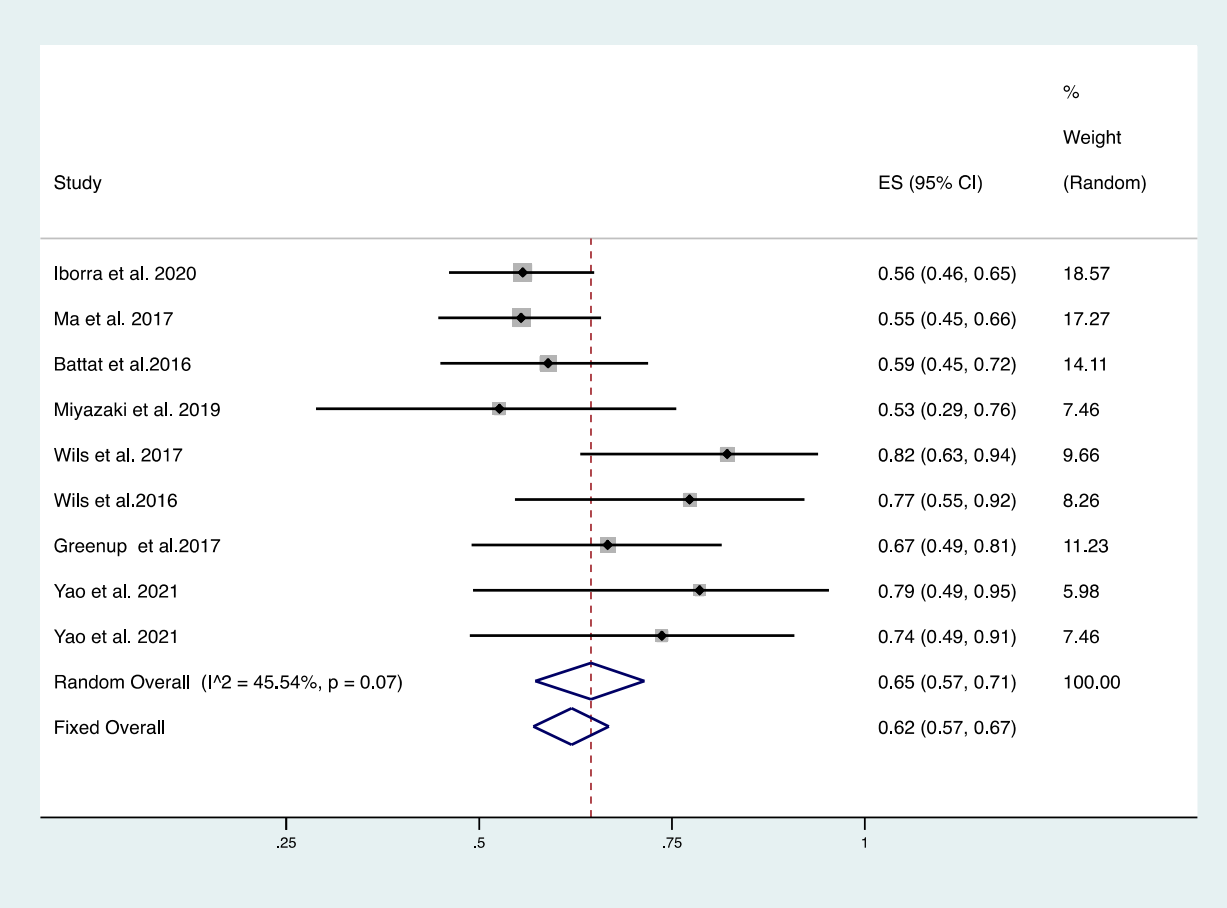
B：week 24 (maintenance)



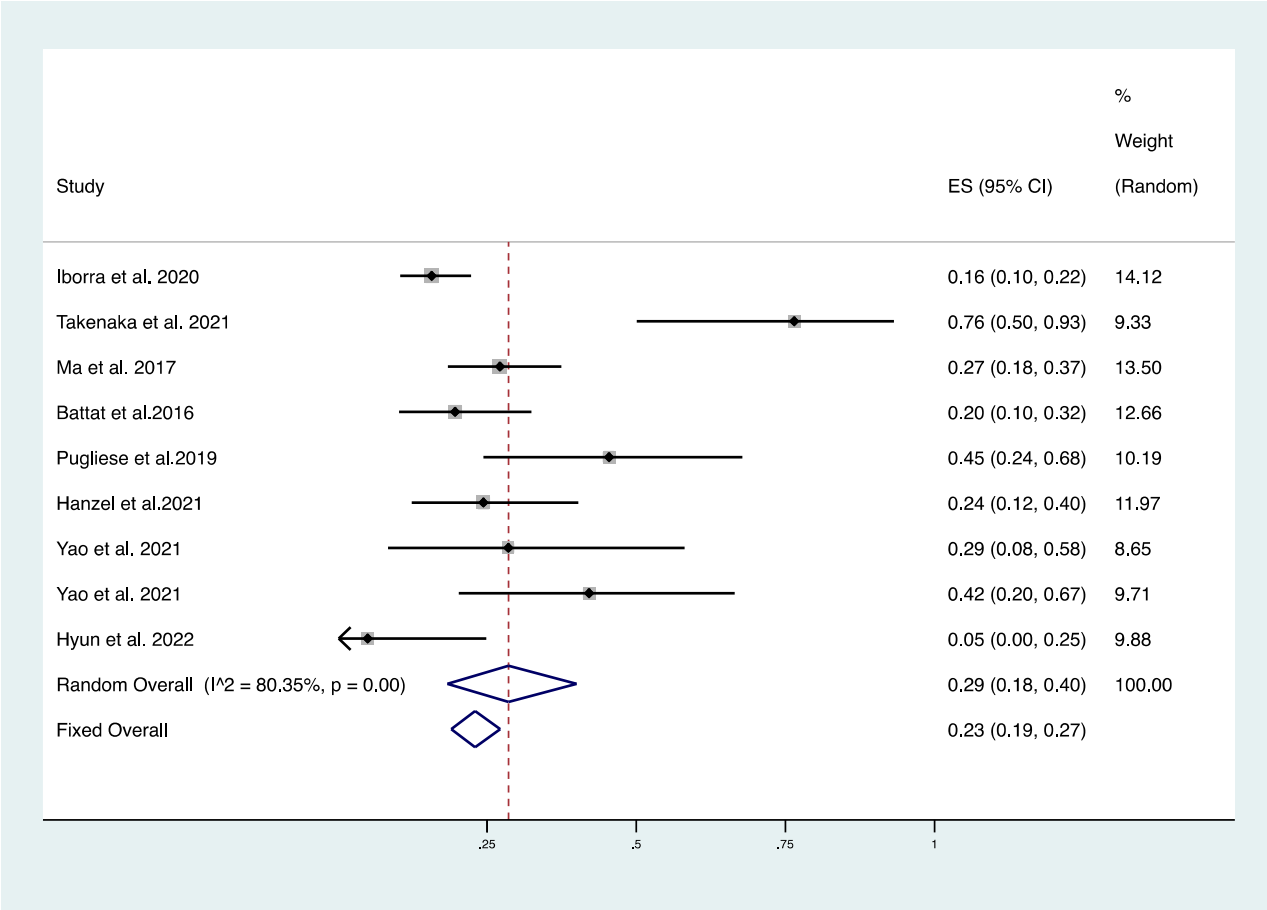
C：1-year (maintenance)



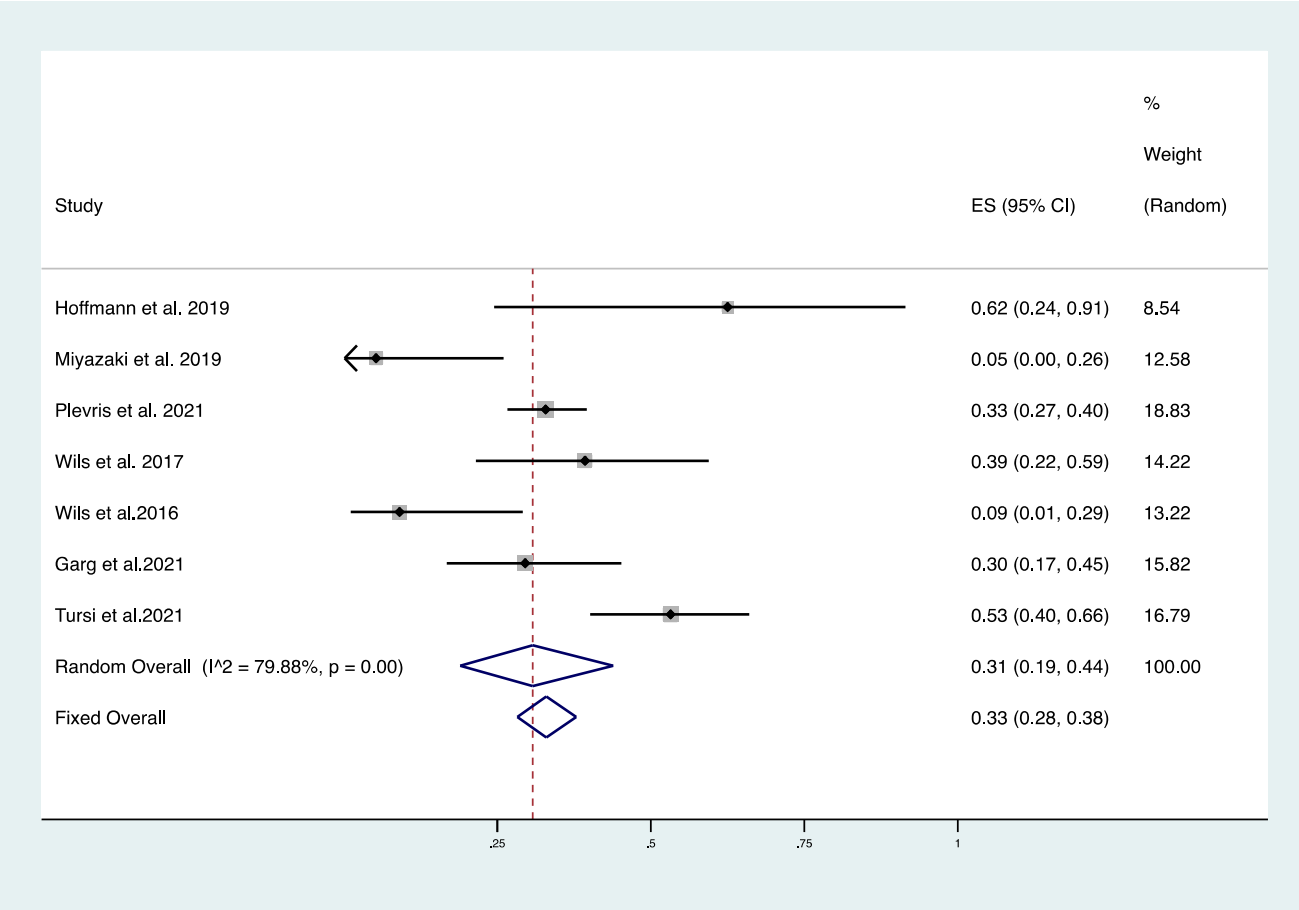
Supplementary Figure S5: Endoscopic response in the 1-year maintenance in Crohn's disease



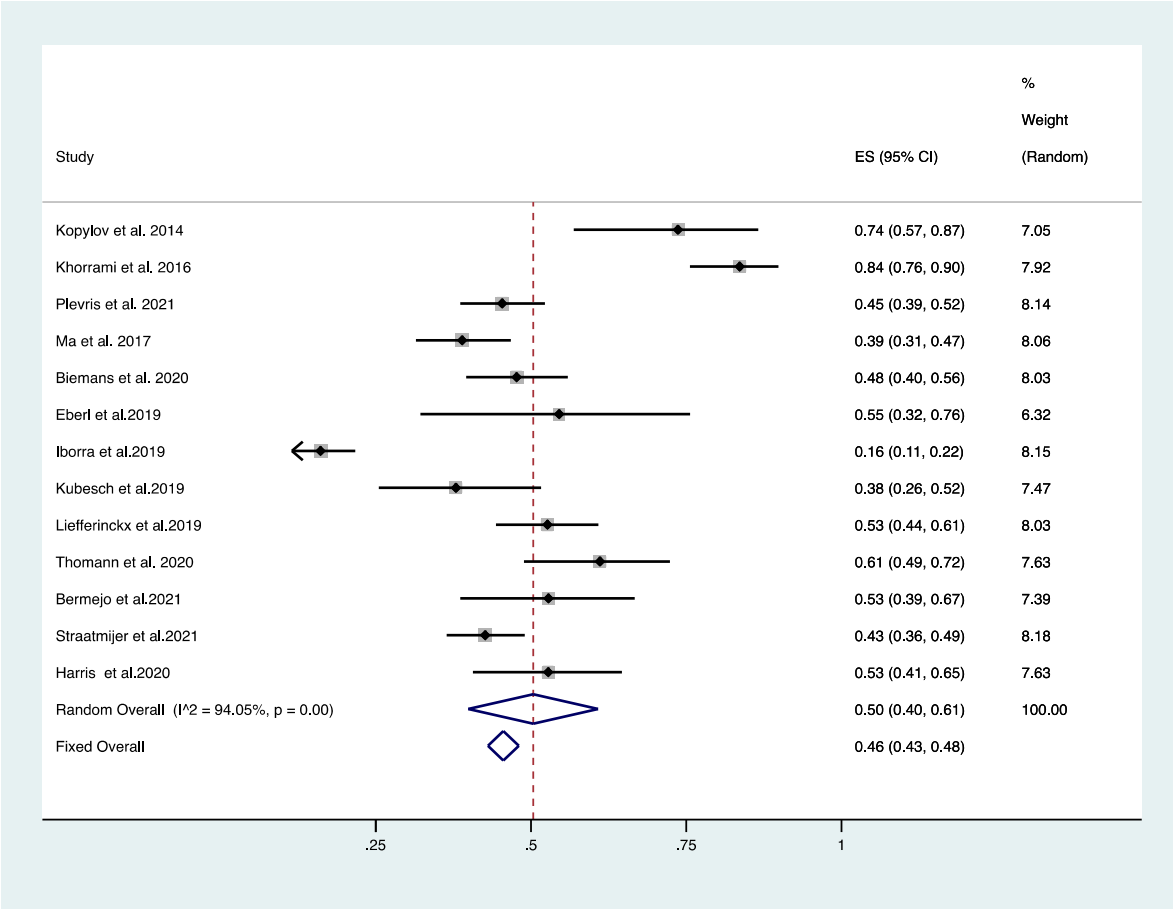
Supplementary Figure S6: Endoscopic remission in the 1-year maintenance in Crohn's disease



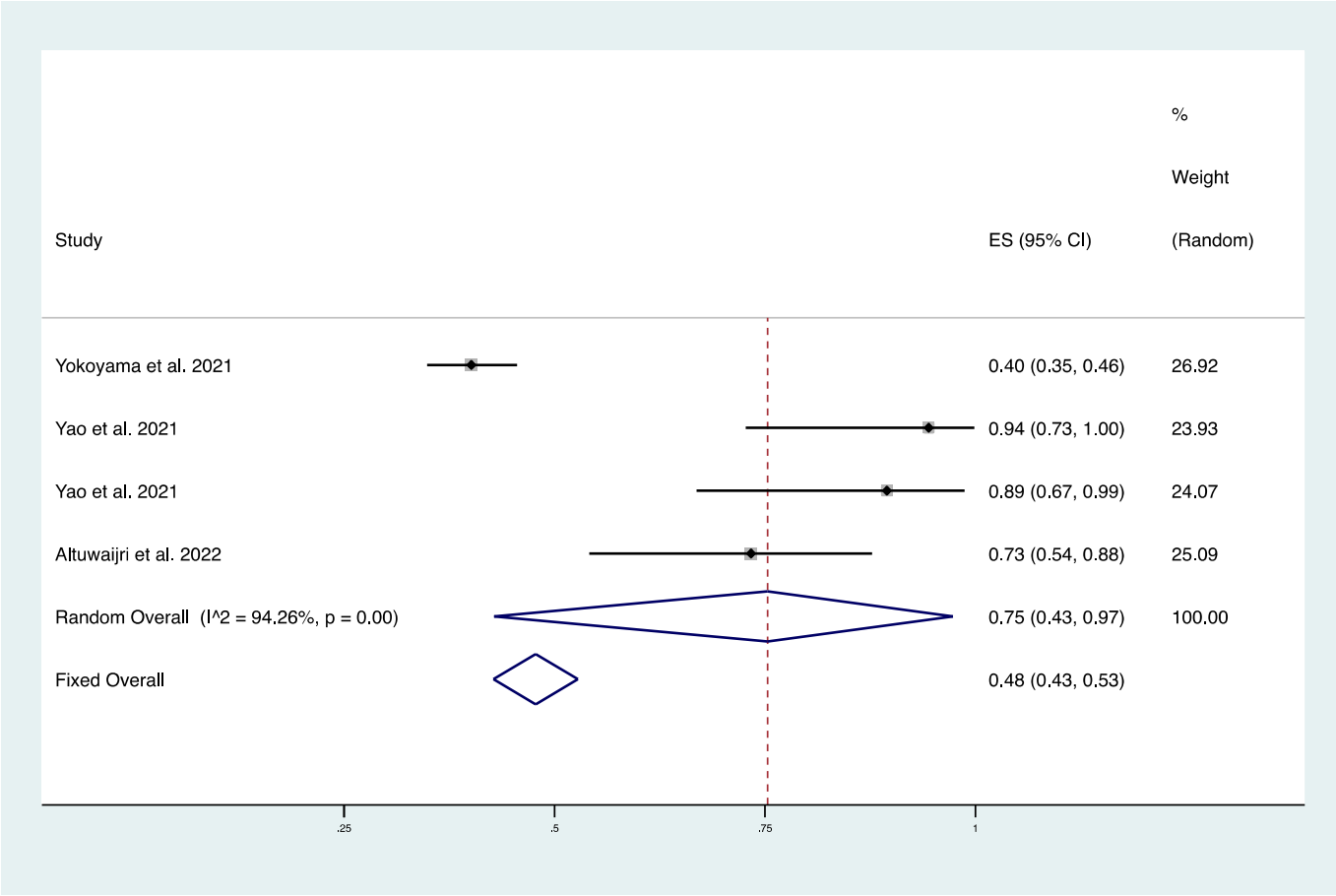
Supplementary Figure S7: Mucosal healing in the 1-year maintenance in Crohn's disease



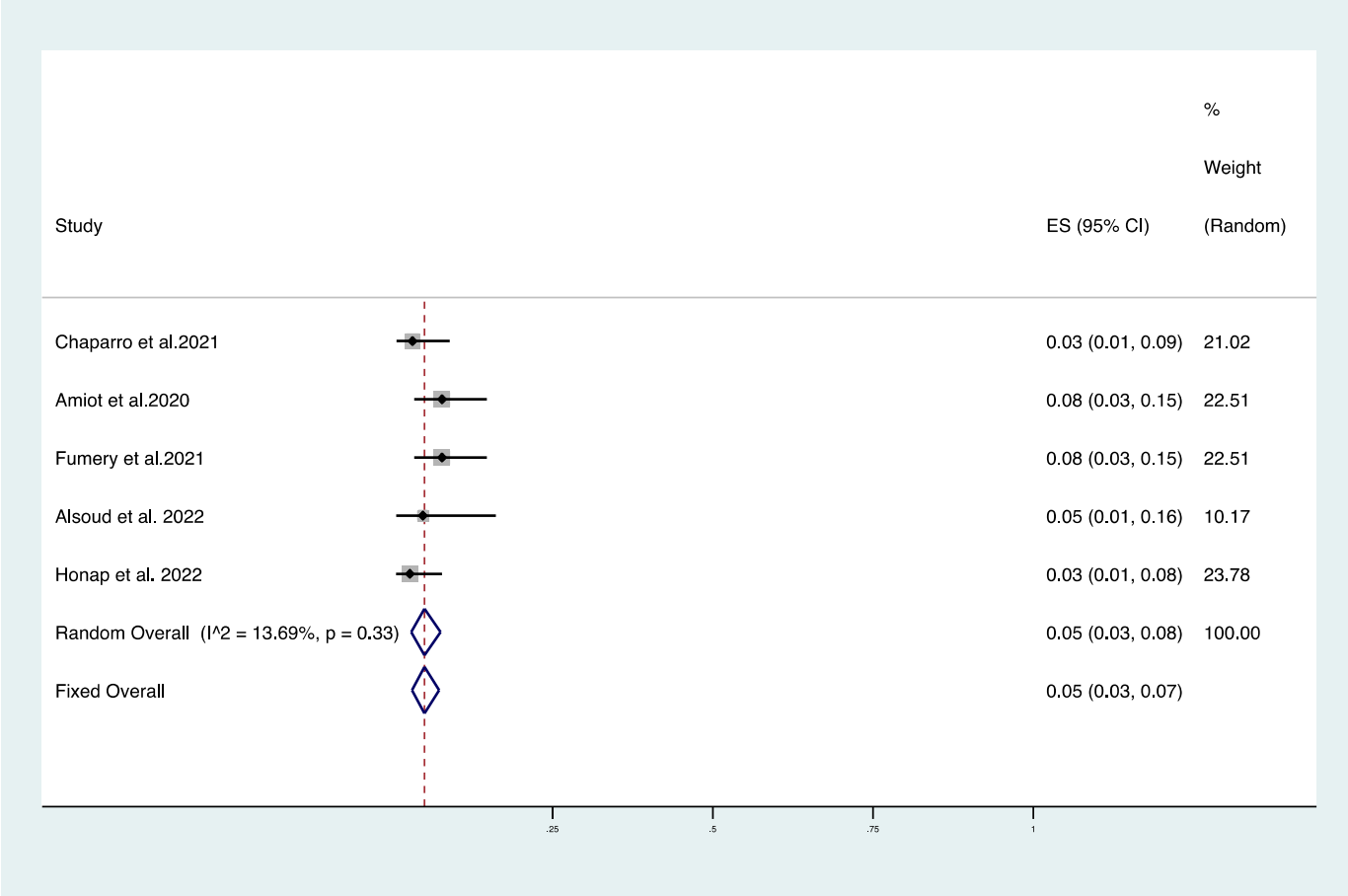
Supplementary Figure S8: Clinical response in Western countries in Crohn's disease



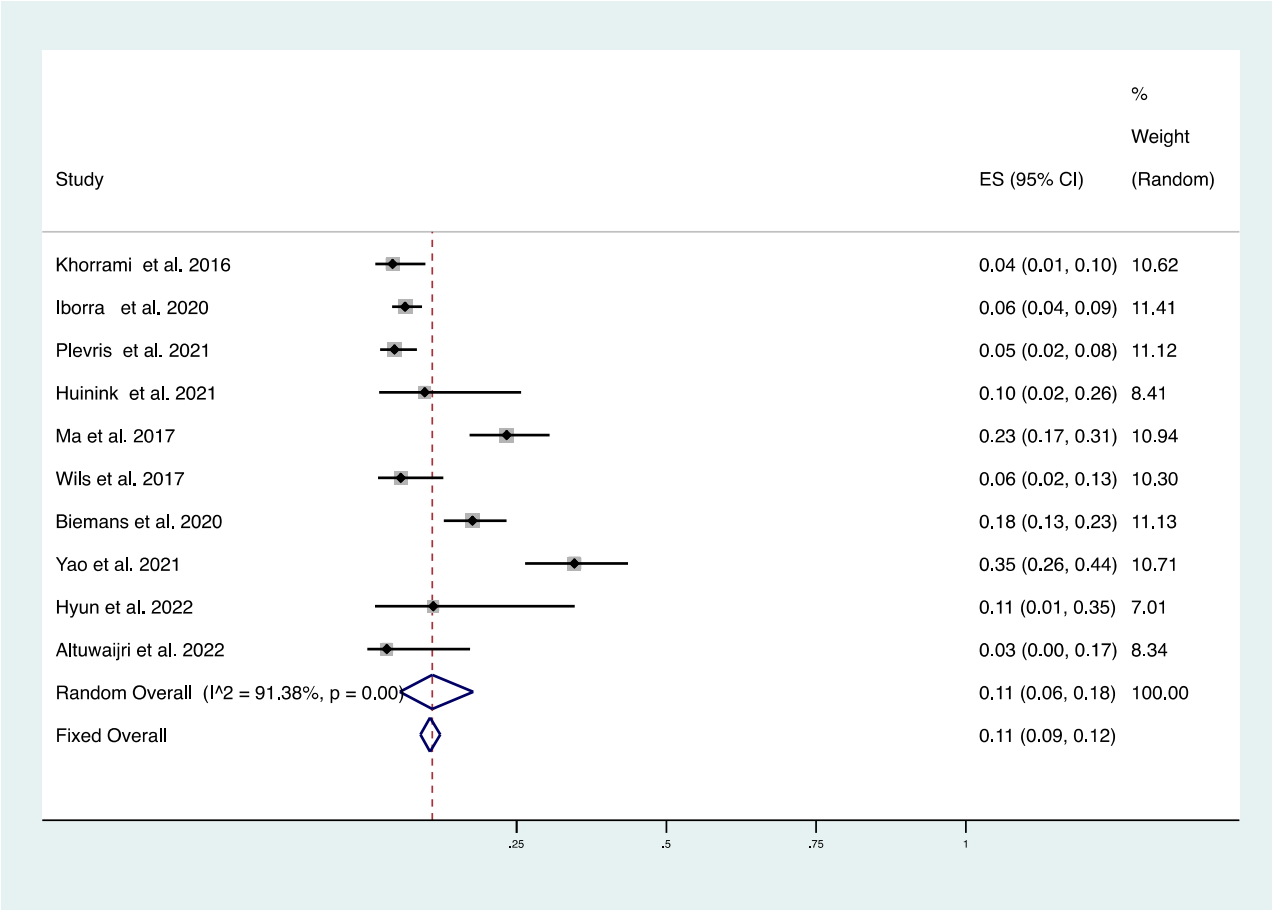
Supplementary Figure S9: Clinical response in Eastern countries in Crohn's disease



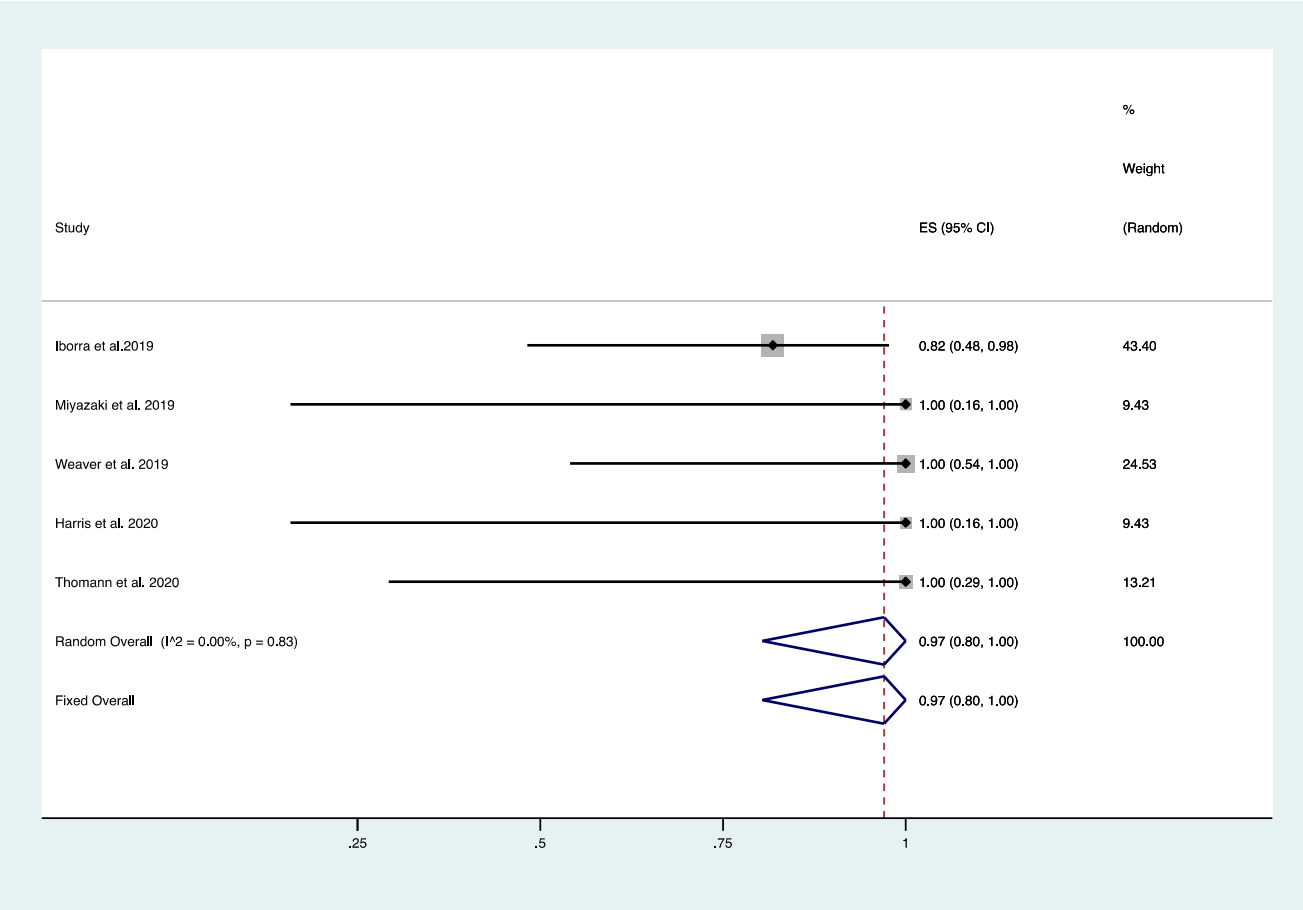
Supplementary Figure S10: Adverse events in ulcerative colitis



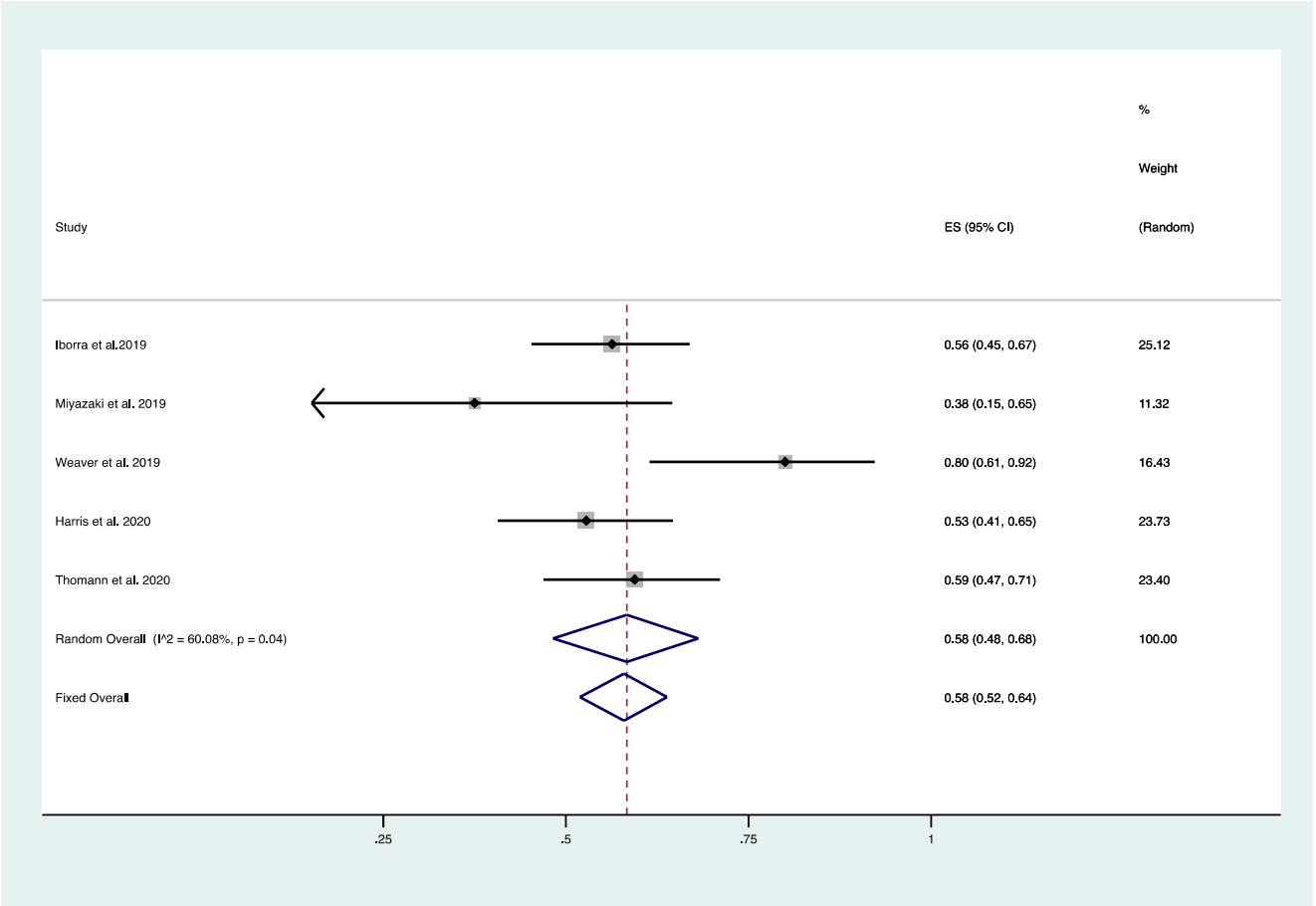
Supplementary Figure S11: Adverse events in Crohn's disease



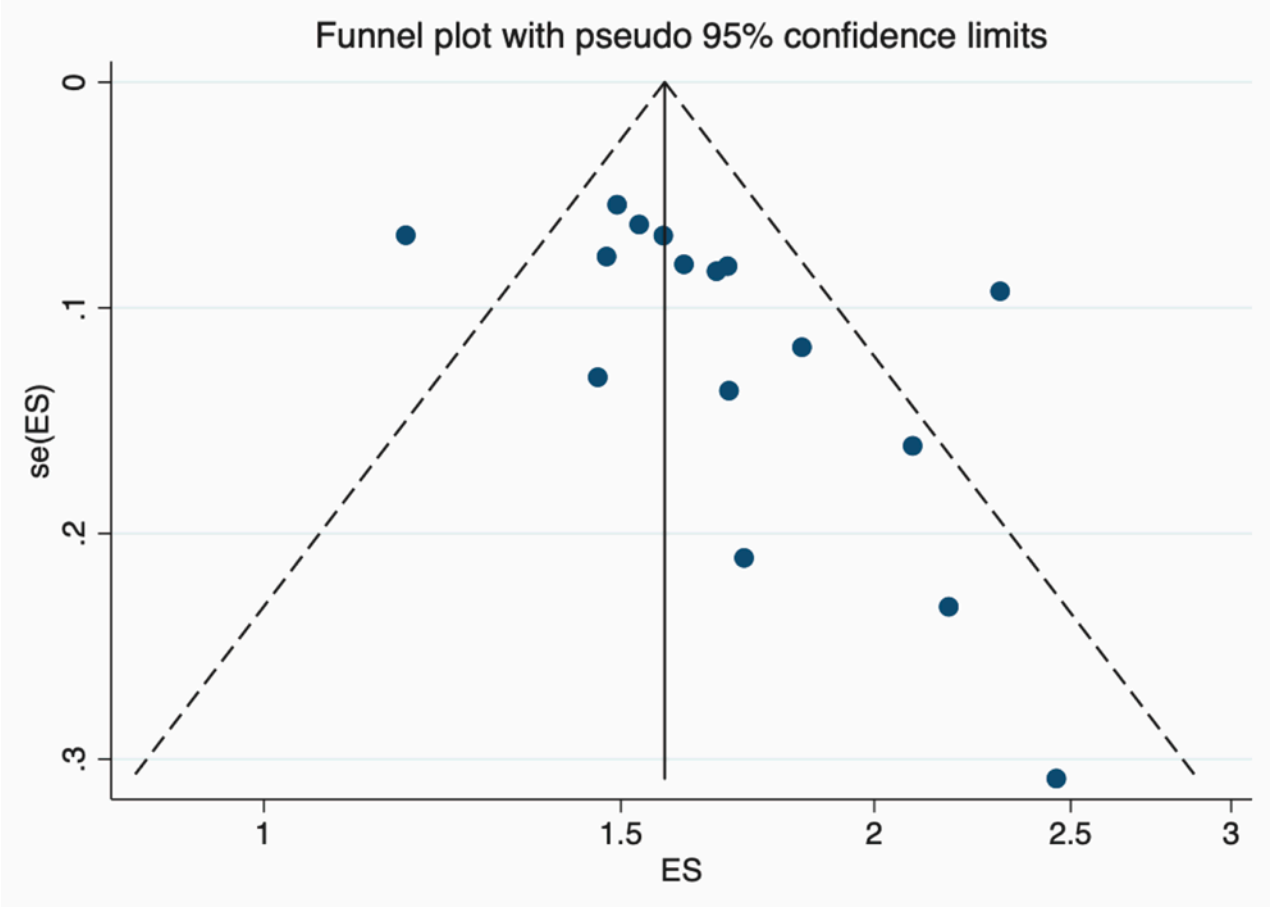
Supplementary Figure S12: Clinical remission in biological native patients

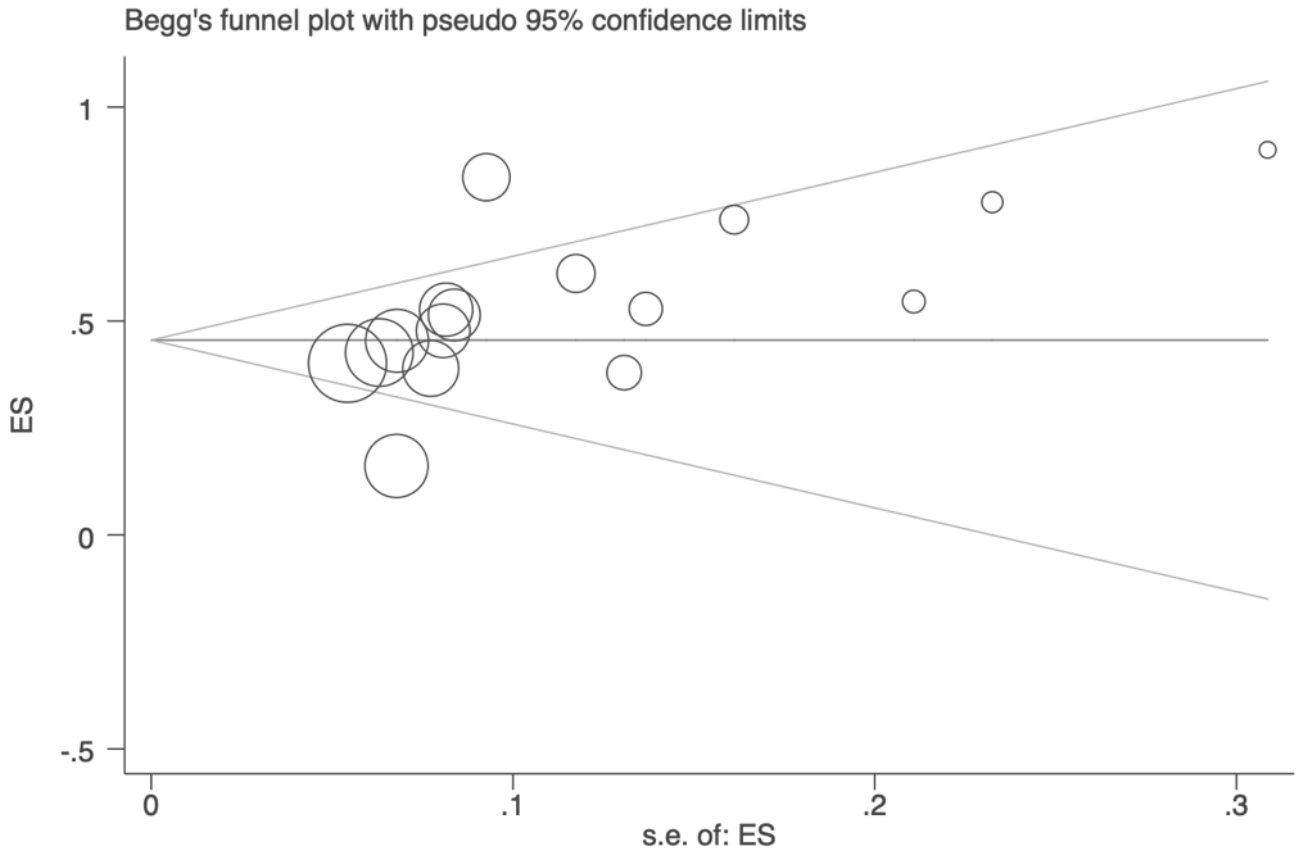


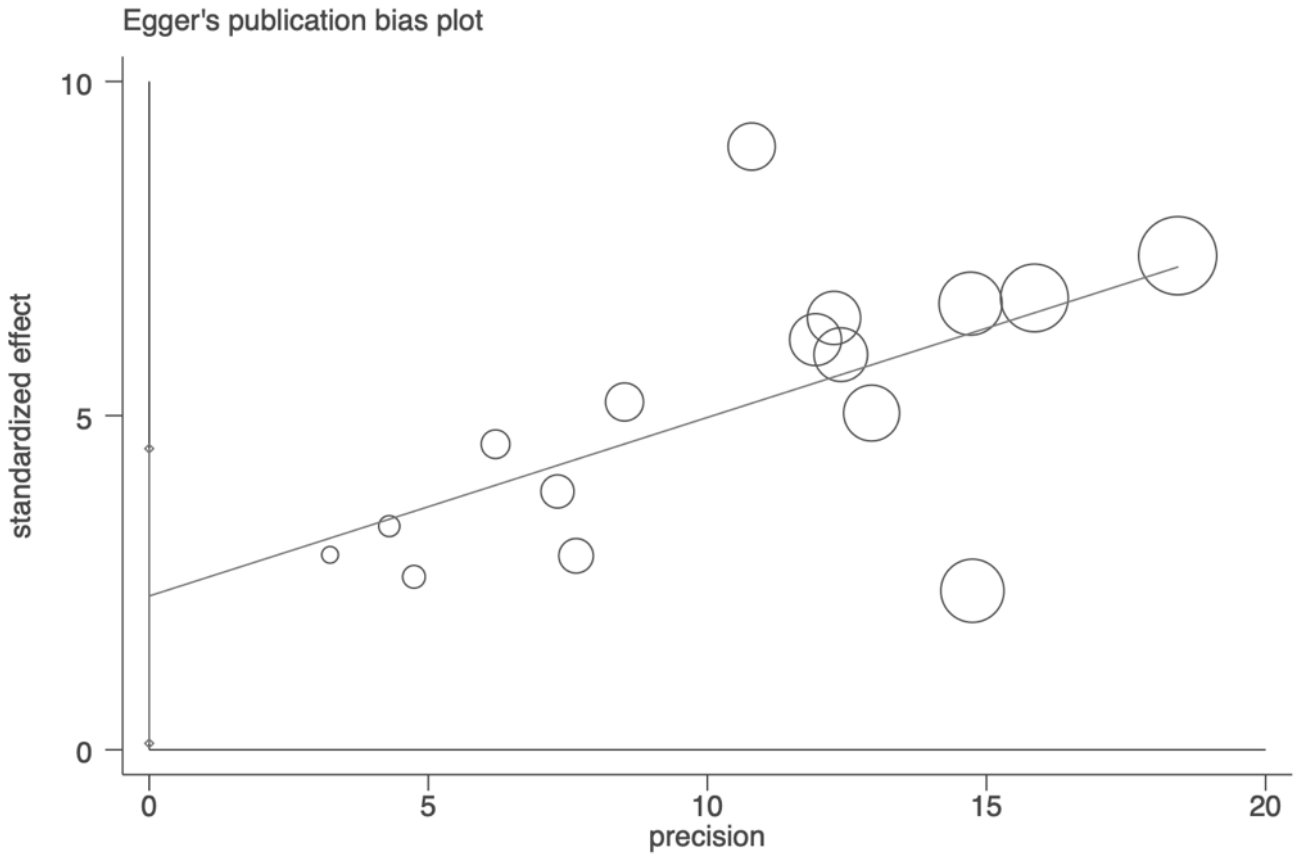
Supplementary Figure S13: Clinical remission in biological experienced patients



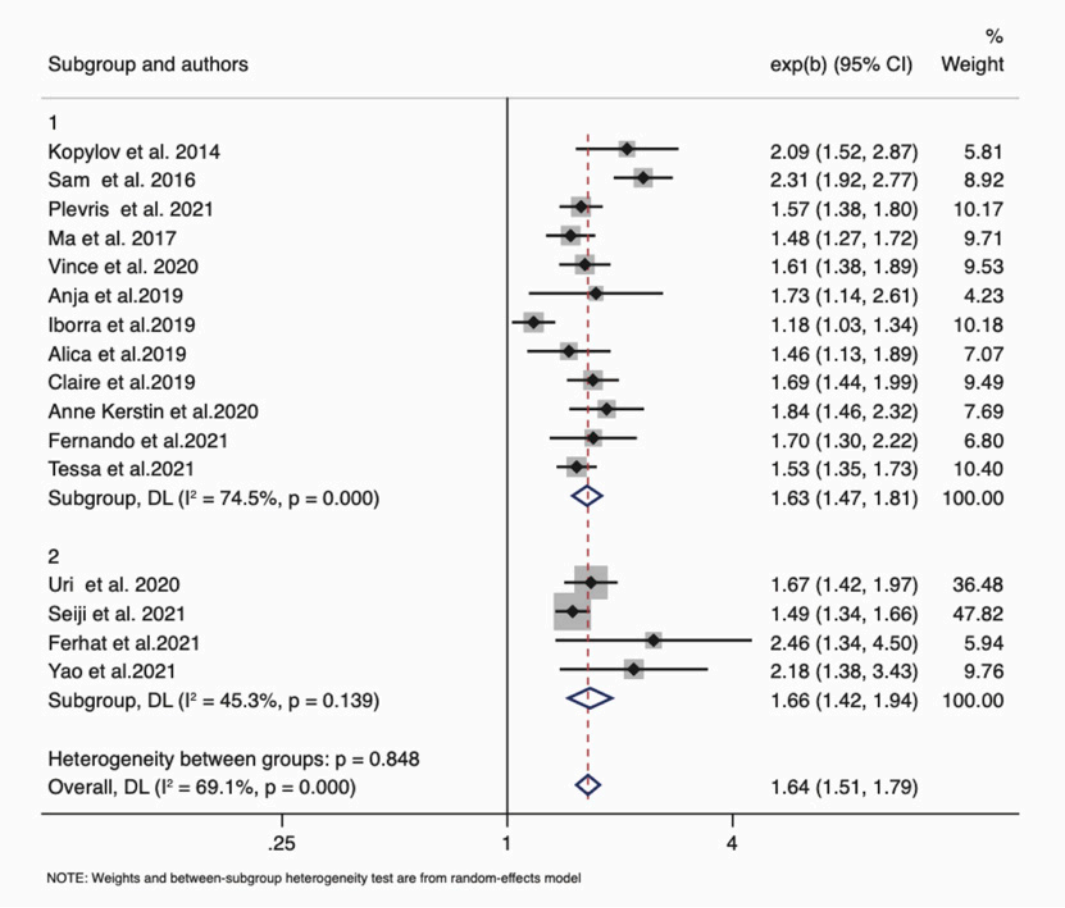
Supplementary Figure S14: Publication bias of clinical response at induction in Crohn's disease



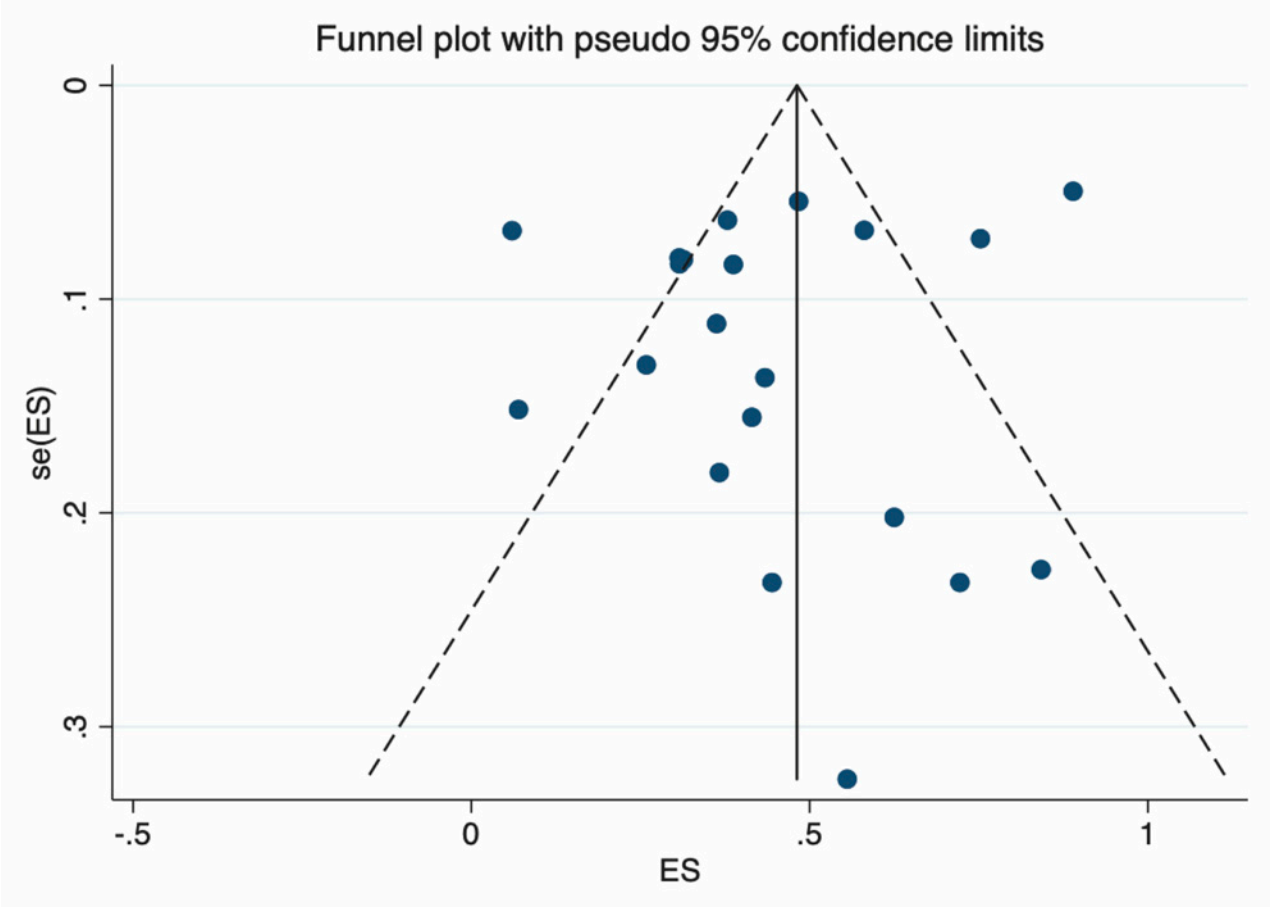

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
-.5
0
.1
.2
.3
s.e. of: ES

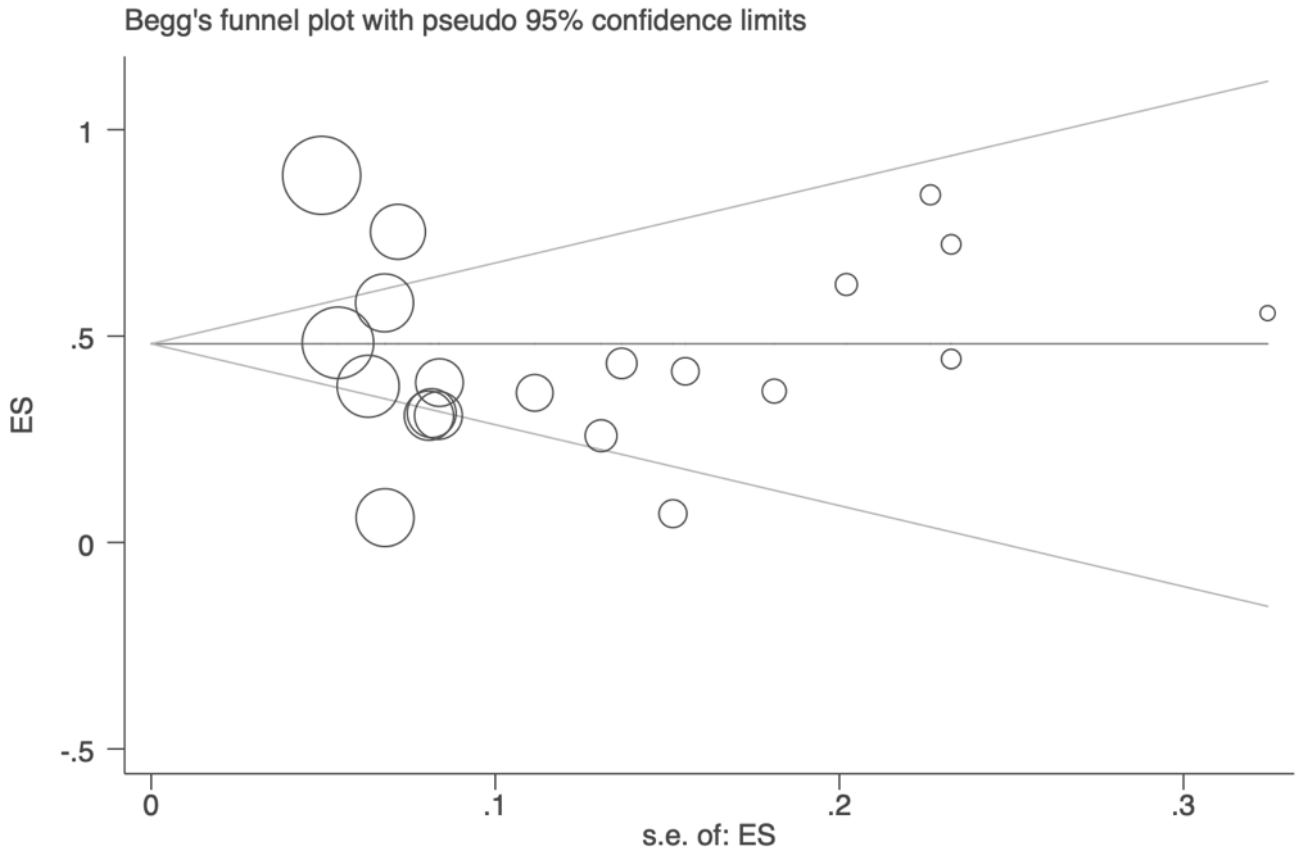

Egger's publication bias plot
standardized effect
10
5
0
0
5
10
15
20
precision

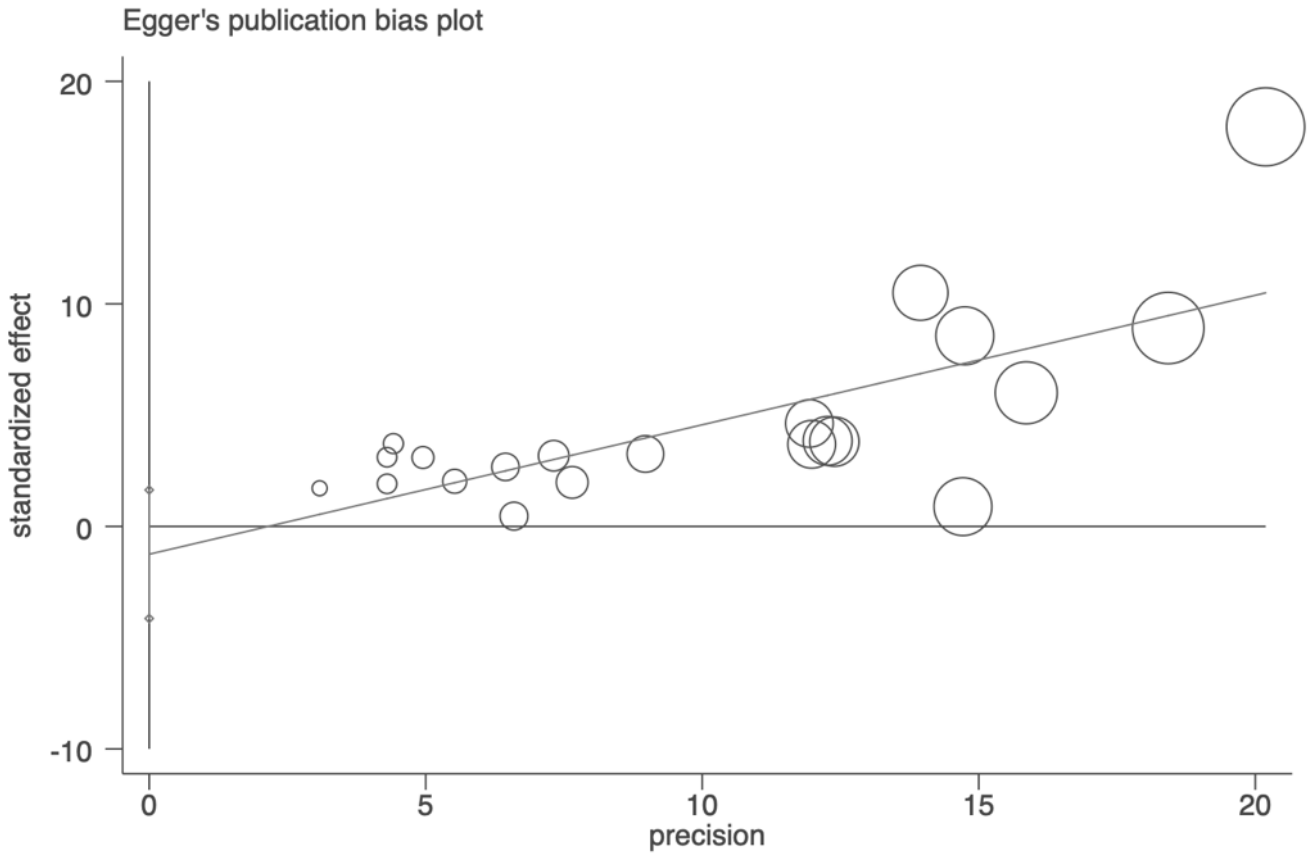
Supplementary Figure S15: Clinical response rates by geographic location at induction in Crohn's disease



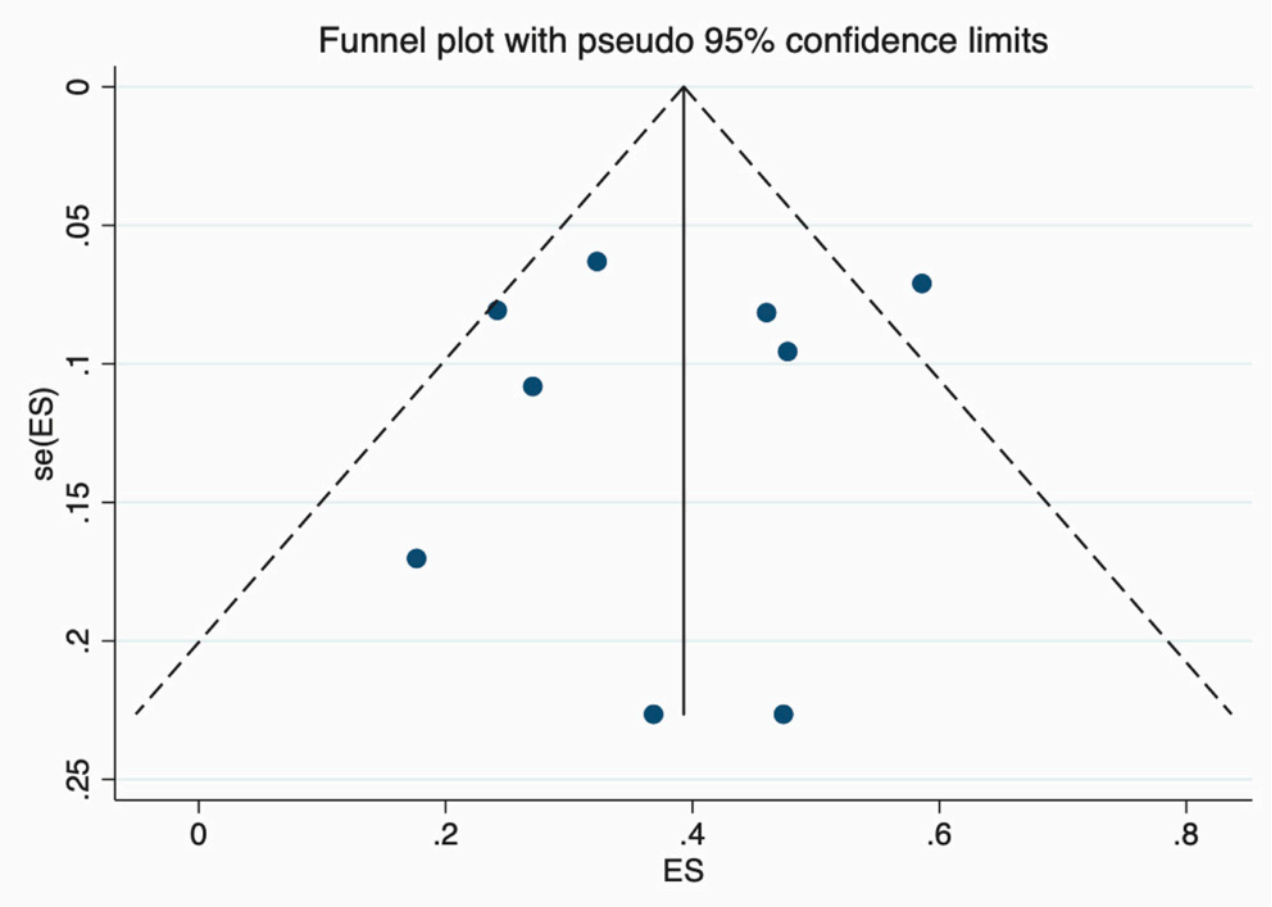
Supplementary Figure S16: Publication bias of clinical remission at induction in Crohn's disease

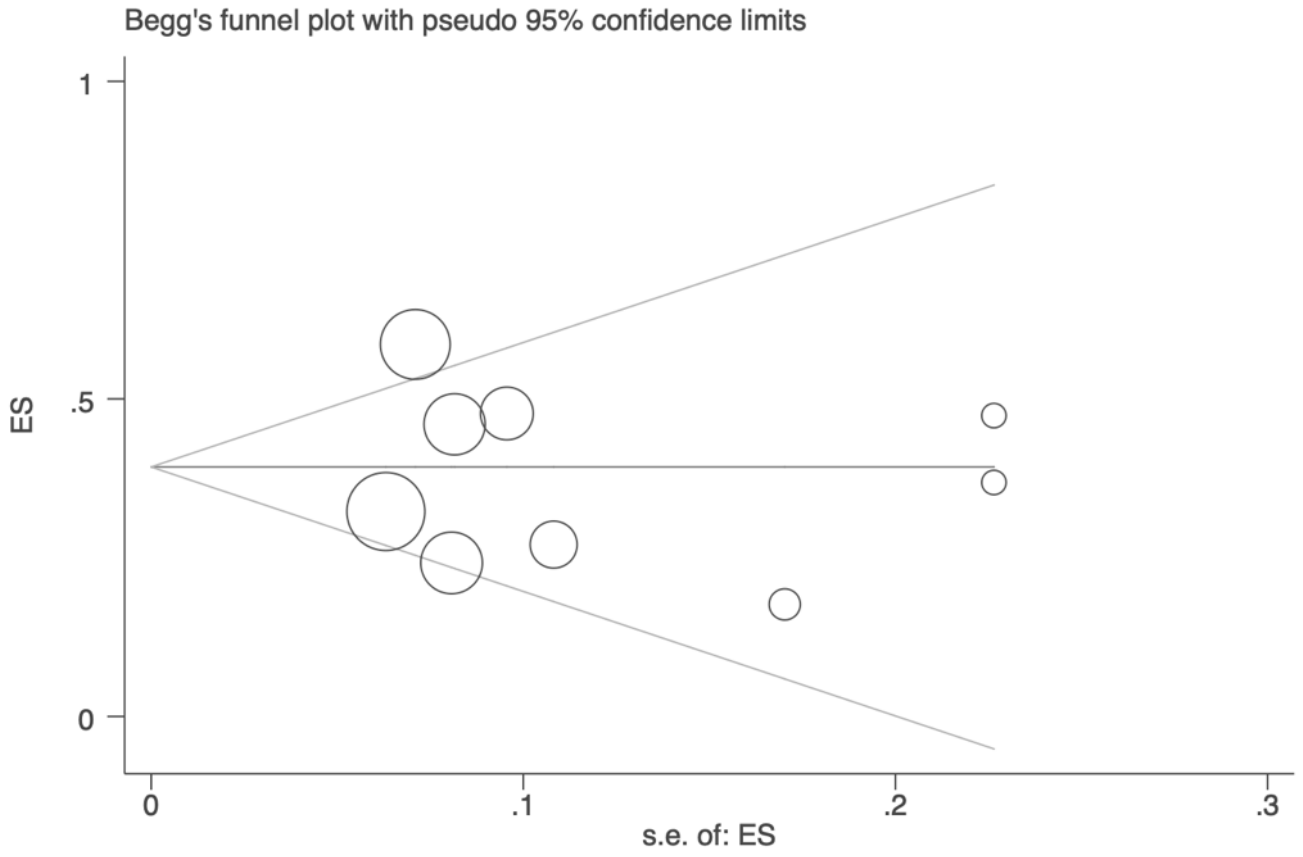


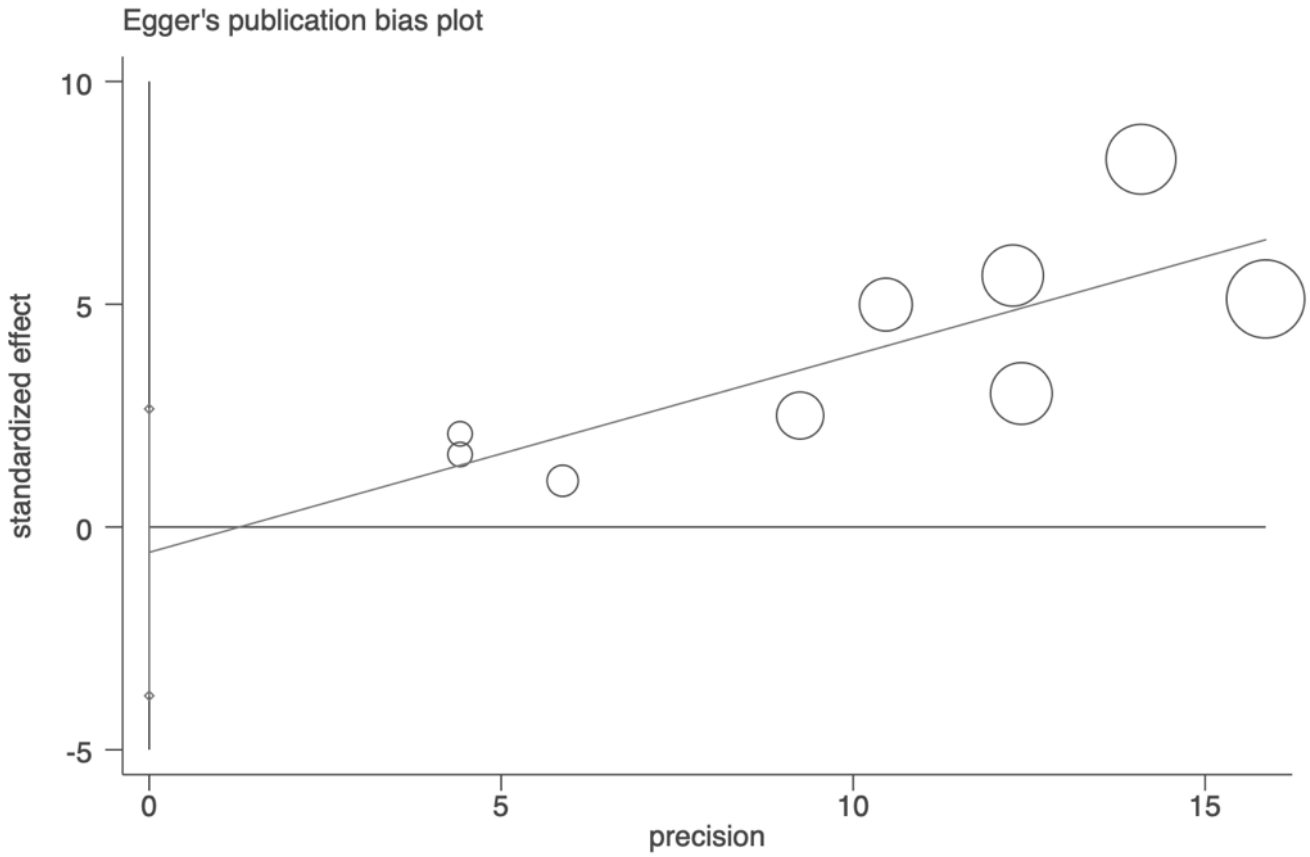

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
-.5
0
.1
.2
.3
s.e. of: ES


Egger's publication bias plot
standardized effect
20
10
0
-10
0
5
10
15
20
precision

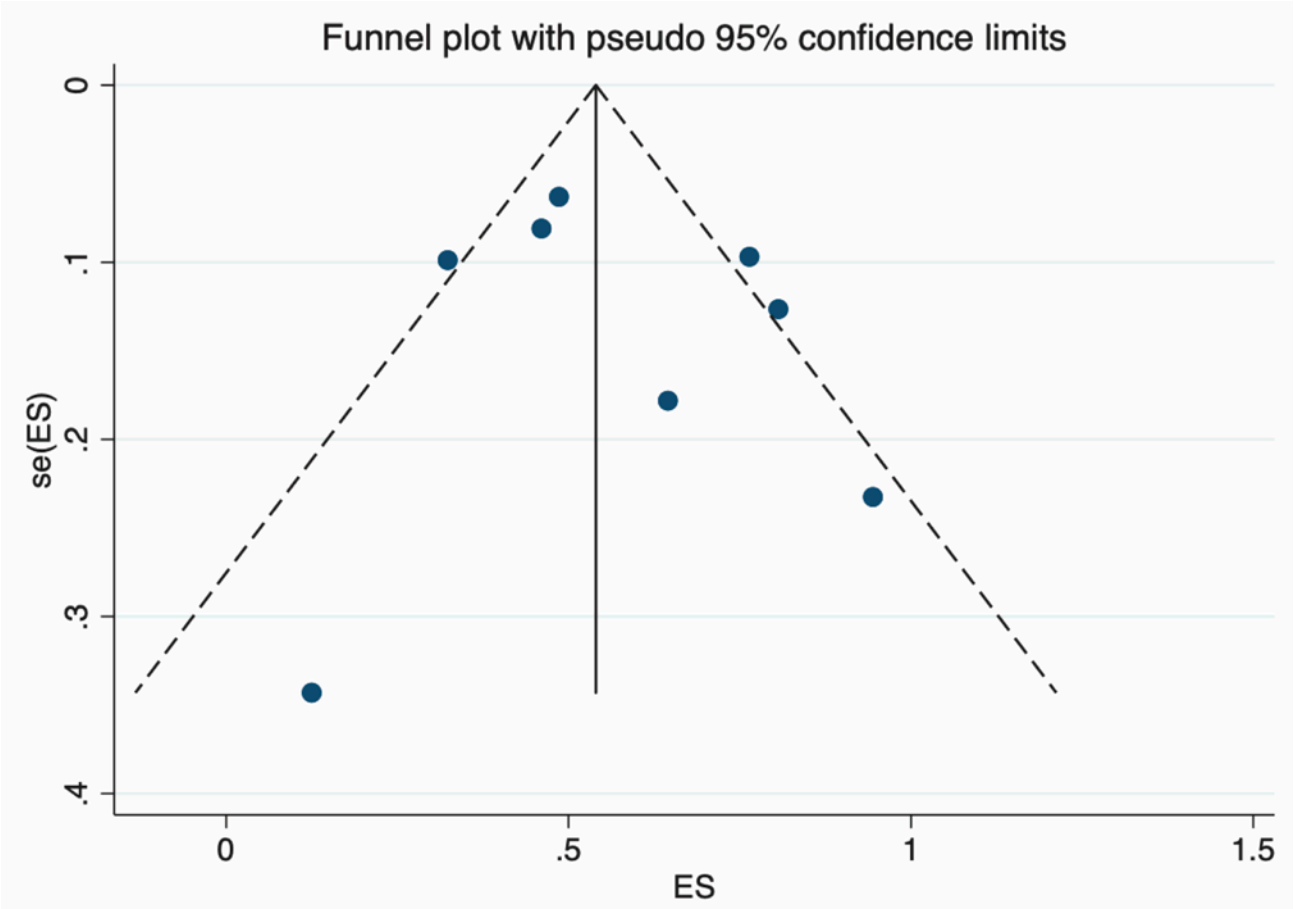
Supplementary Figure S17: Publication bias of cs-free remission at induction in Crohn's disease

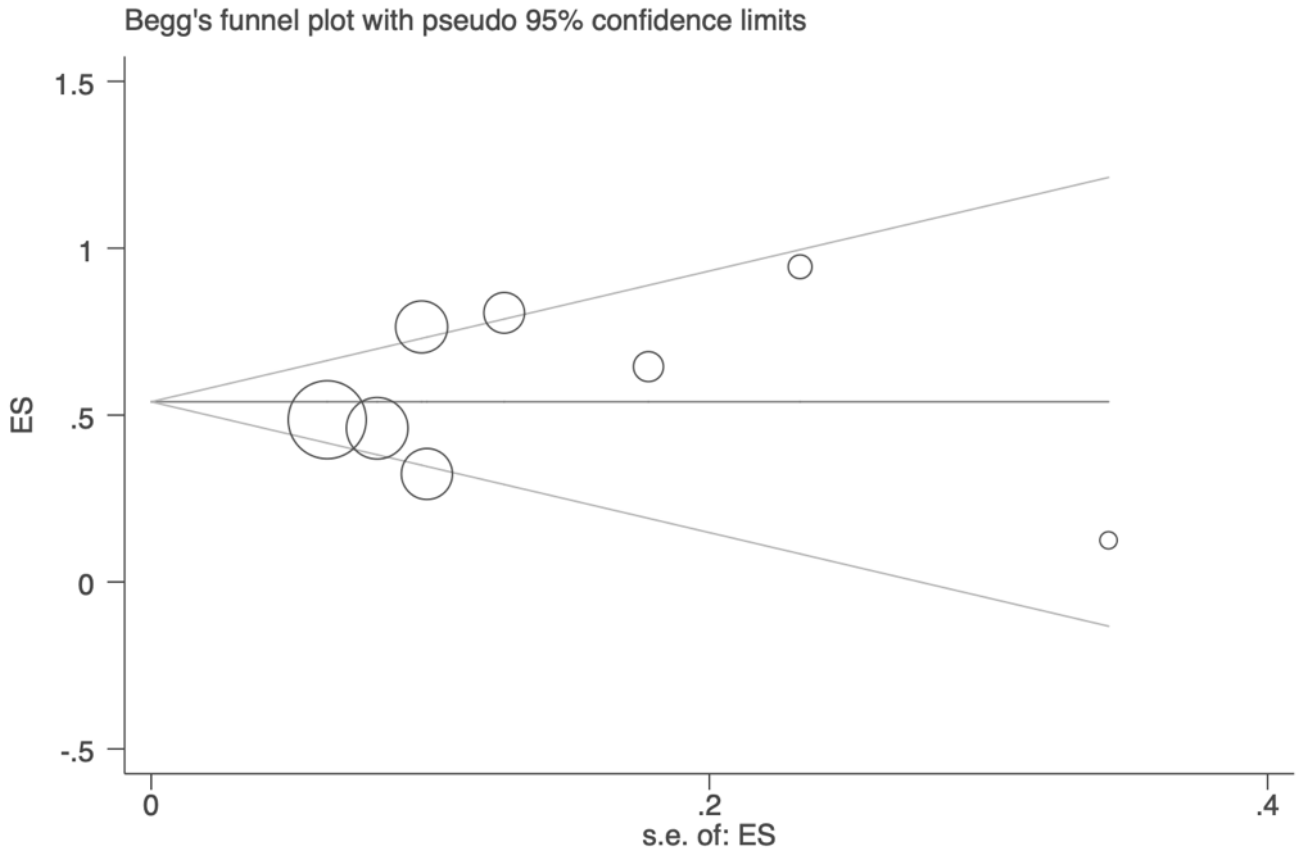


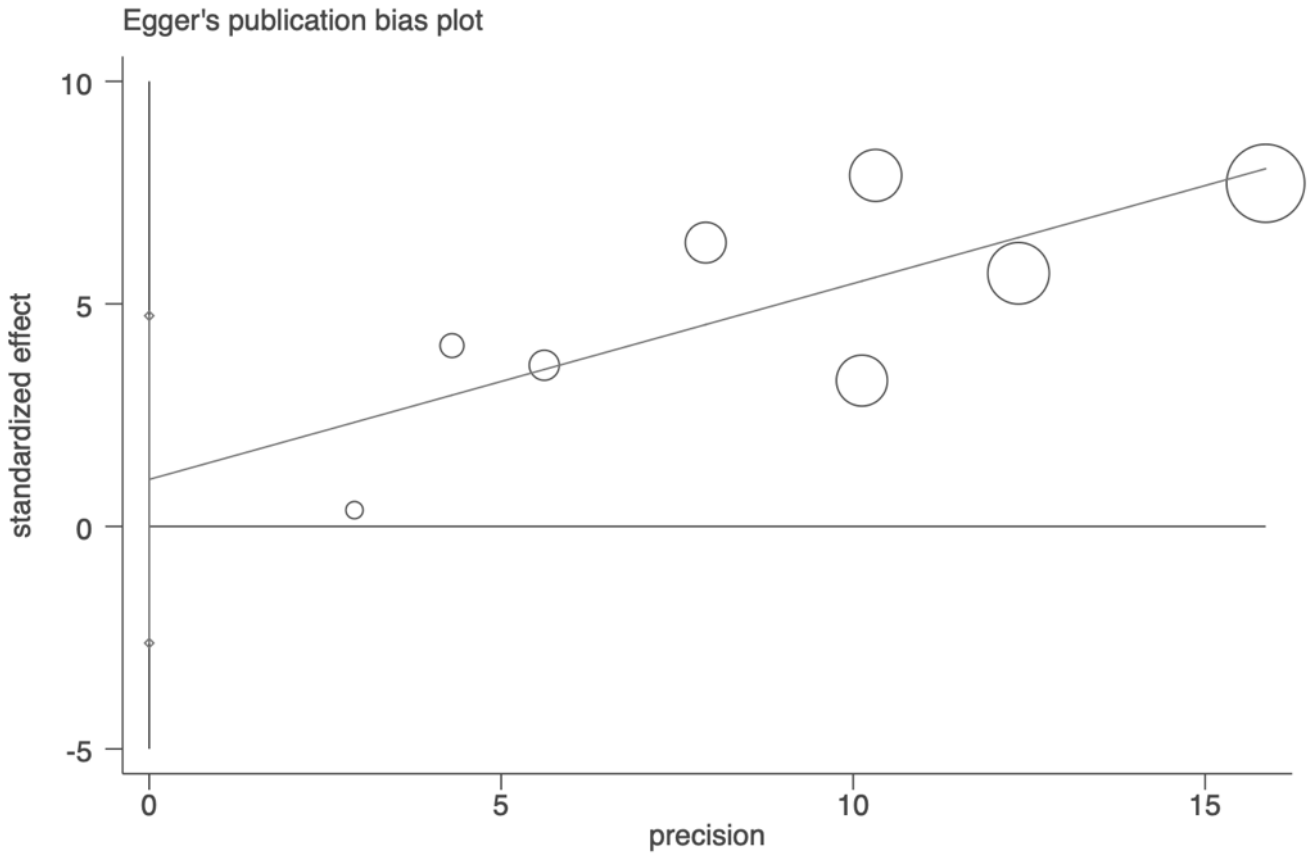

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
0
.1
.2
.3
s.e. of: ES


Egger's publication bias plot
standardized effect
10
5
0
-5
0
5
10
15
precision

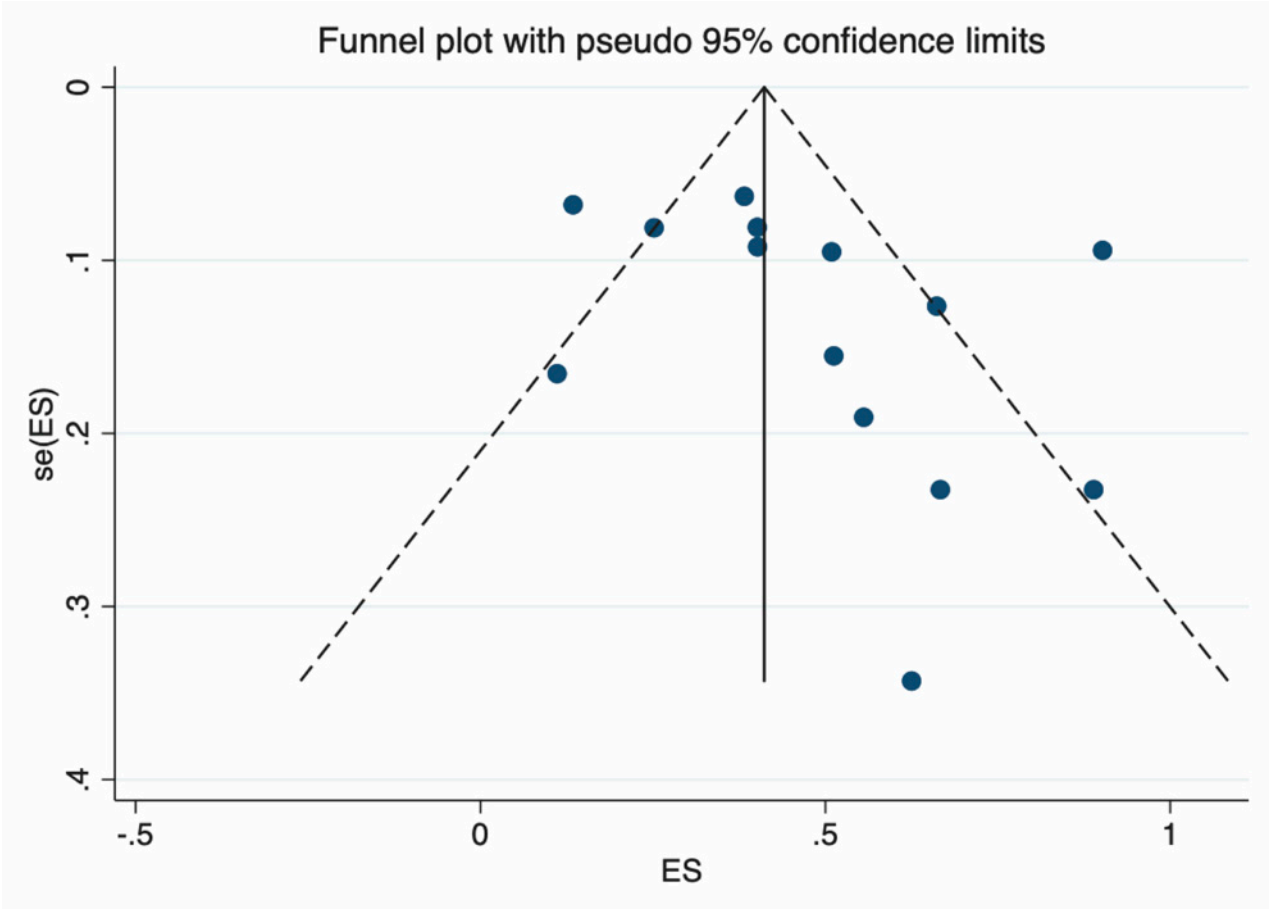
Supplementary Figure S18: Publication bias of clinical response in the 24-week maintenance in Crohn's disease

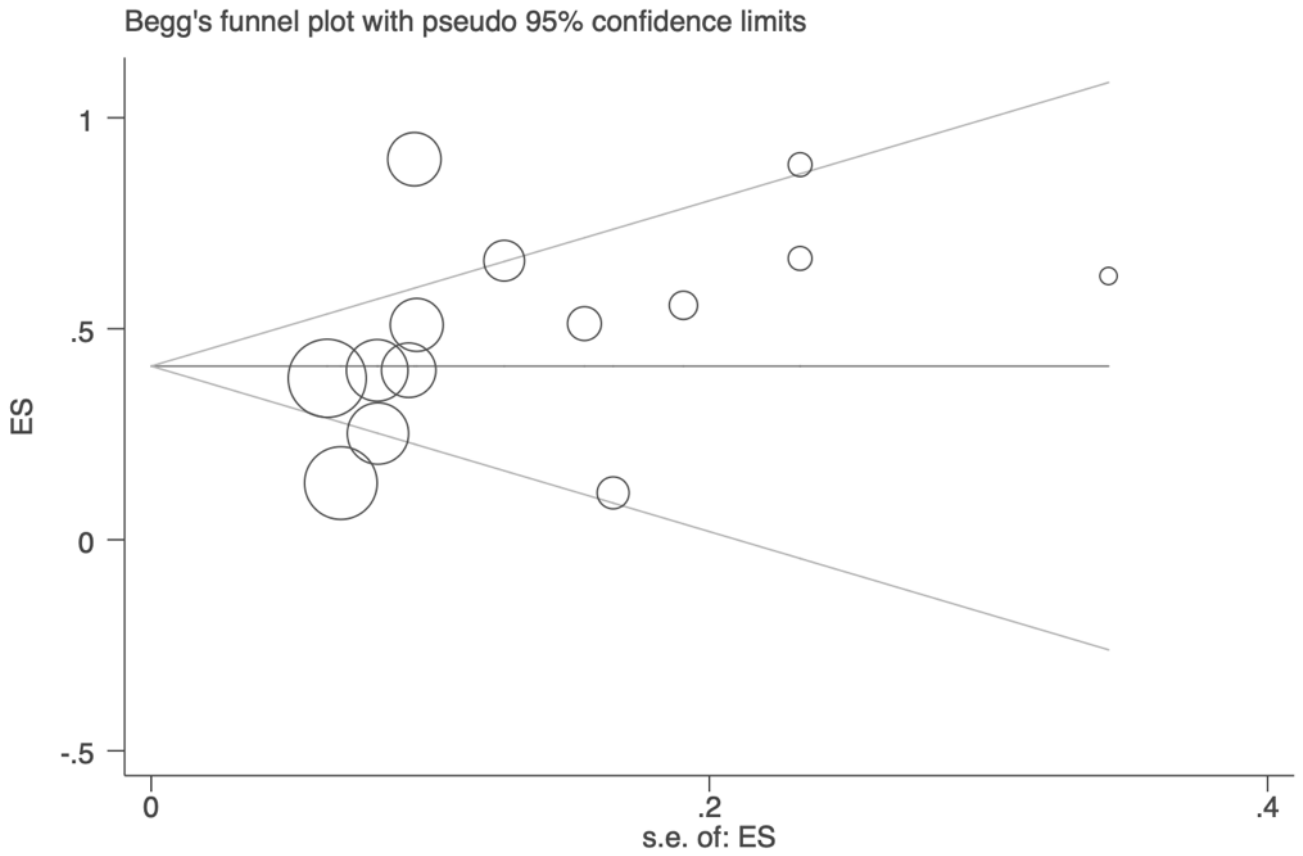


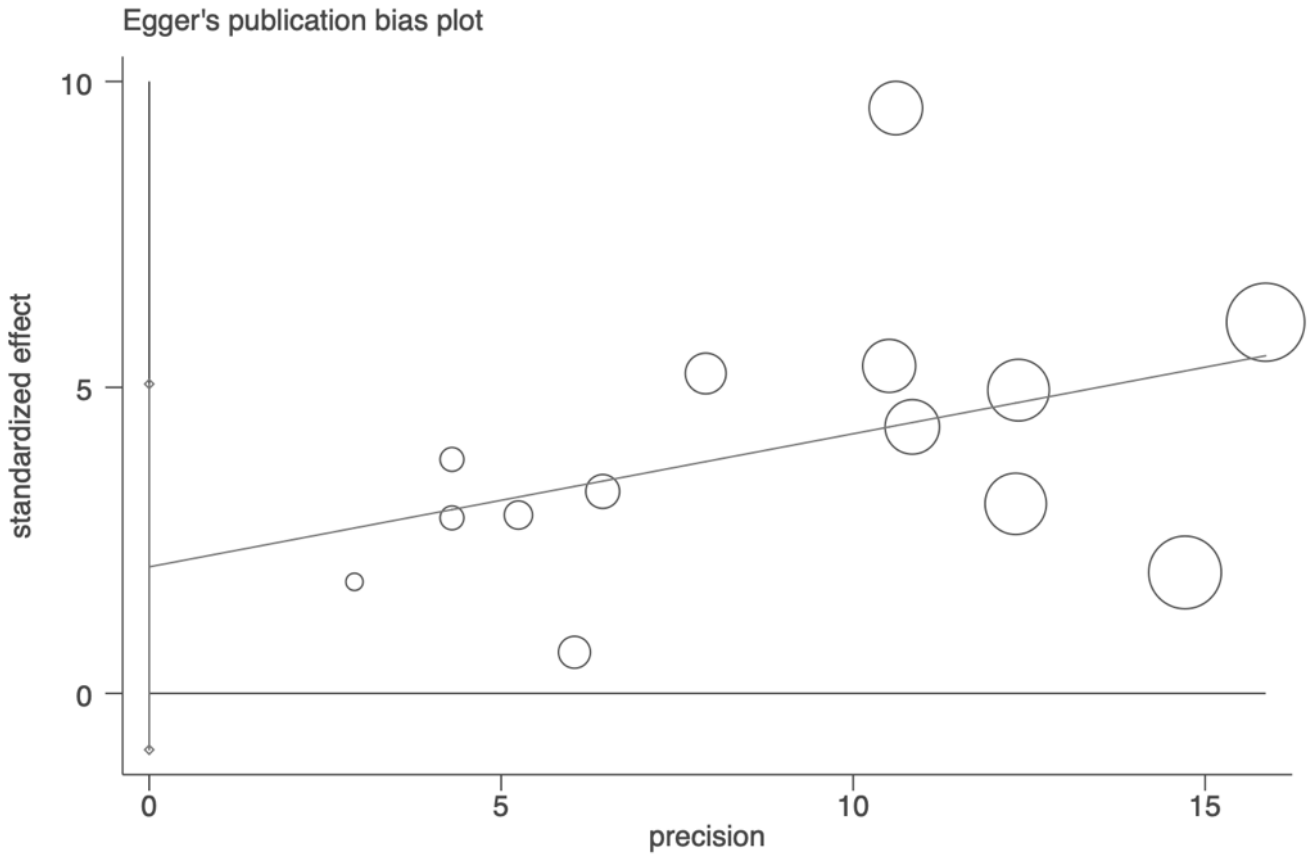

Begg's funnel plot with pseudo 95% confidence limits
1.5
1
.5
0
-.5
ES
0
.2
.4
s.e. of: ES


Egger's publication bias plot
standardized effect
10
5
0
-5
0
5
10
15
precision

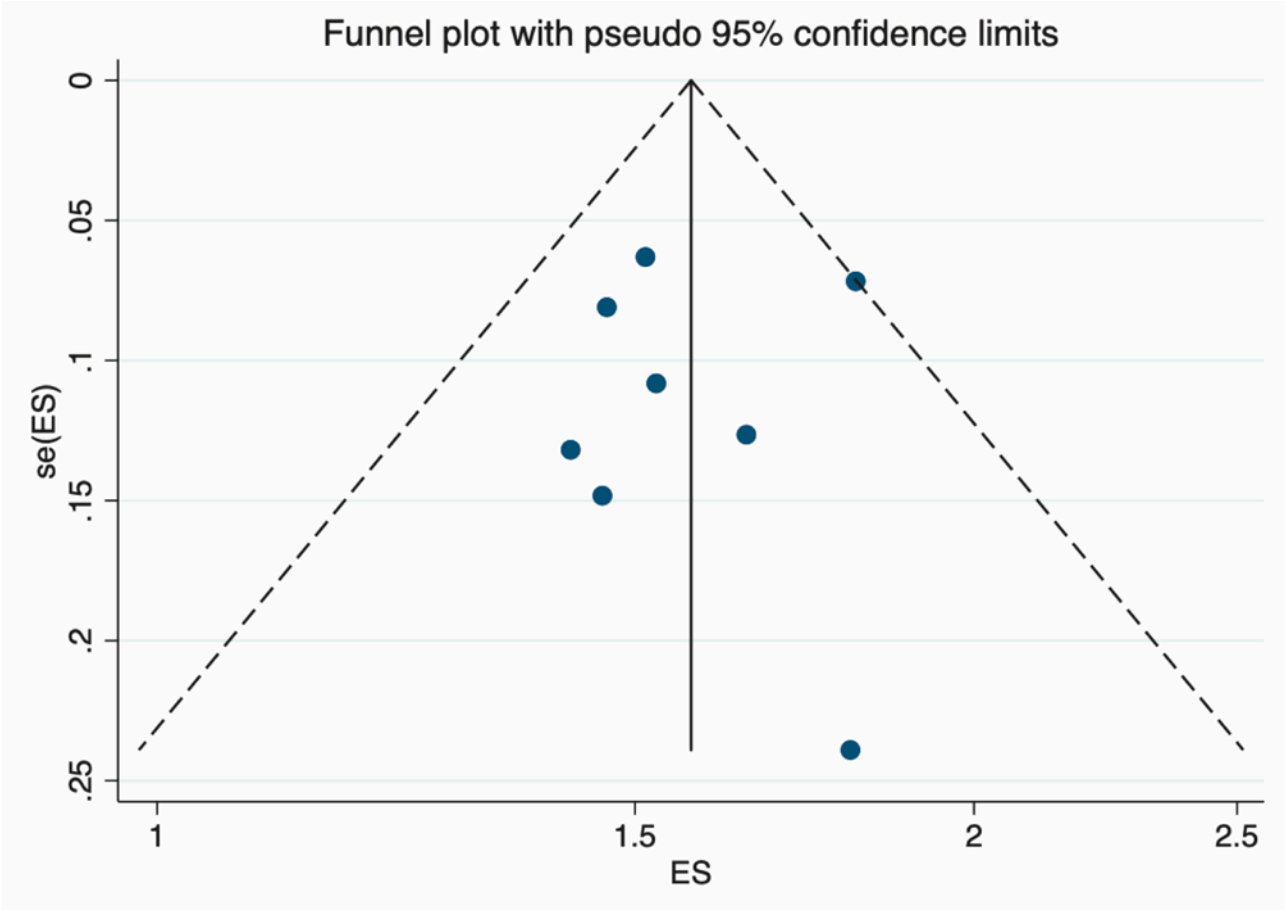
Supplementary Figure S19: Publication bias of clinical remission in the 24-week maintenance in Crohn's disease

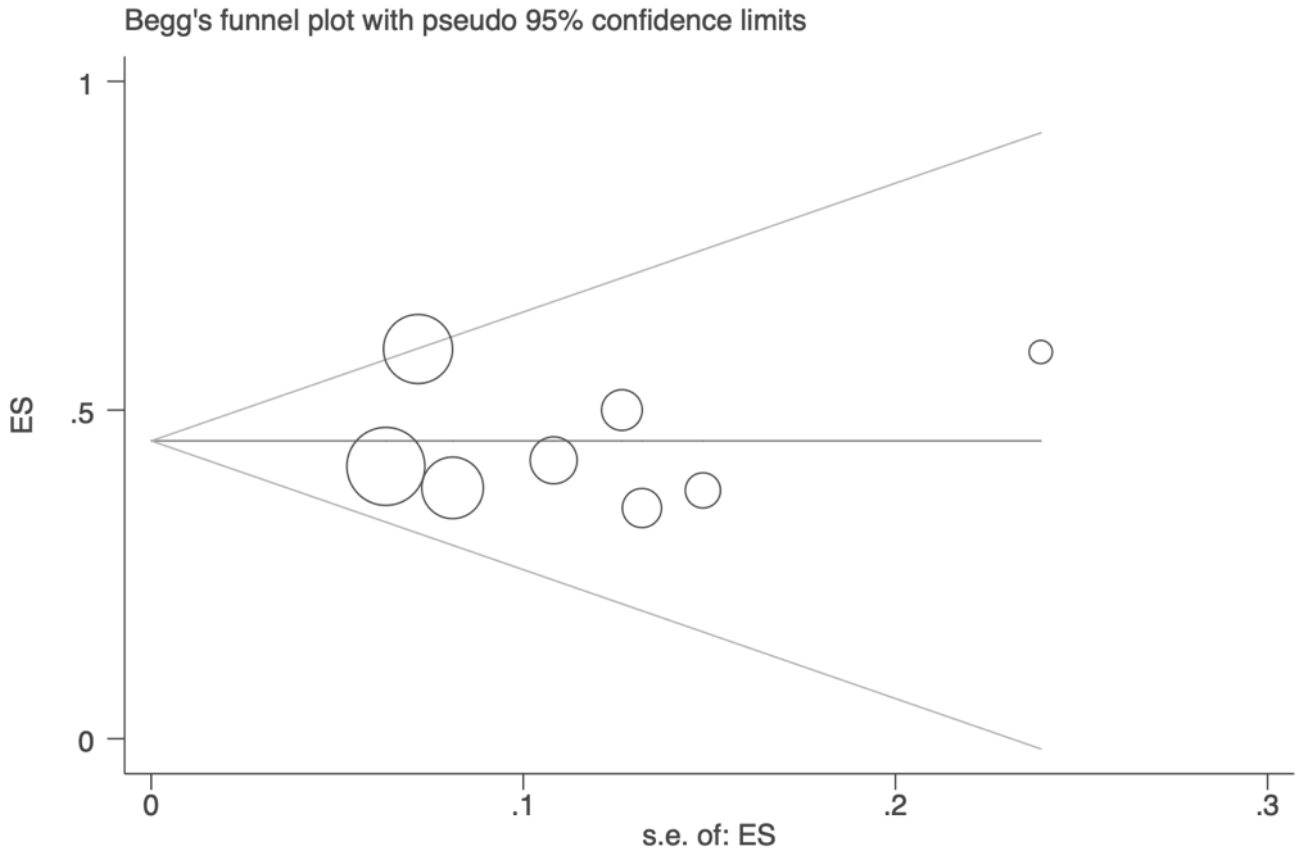


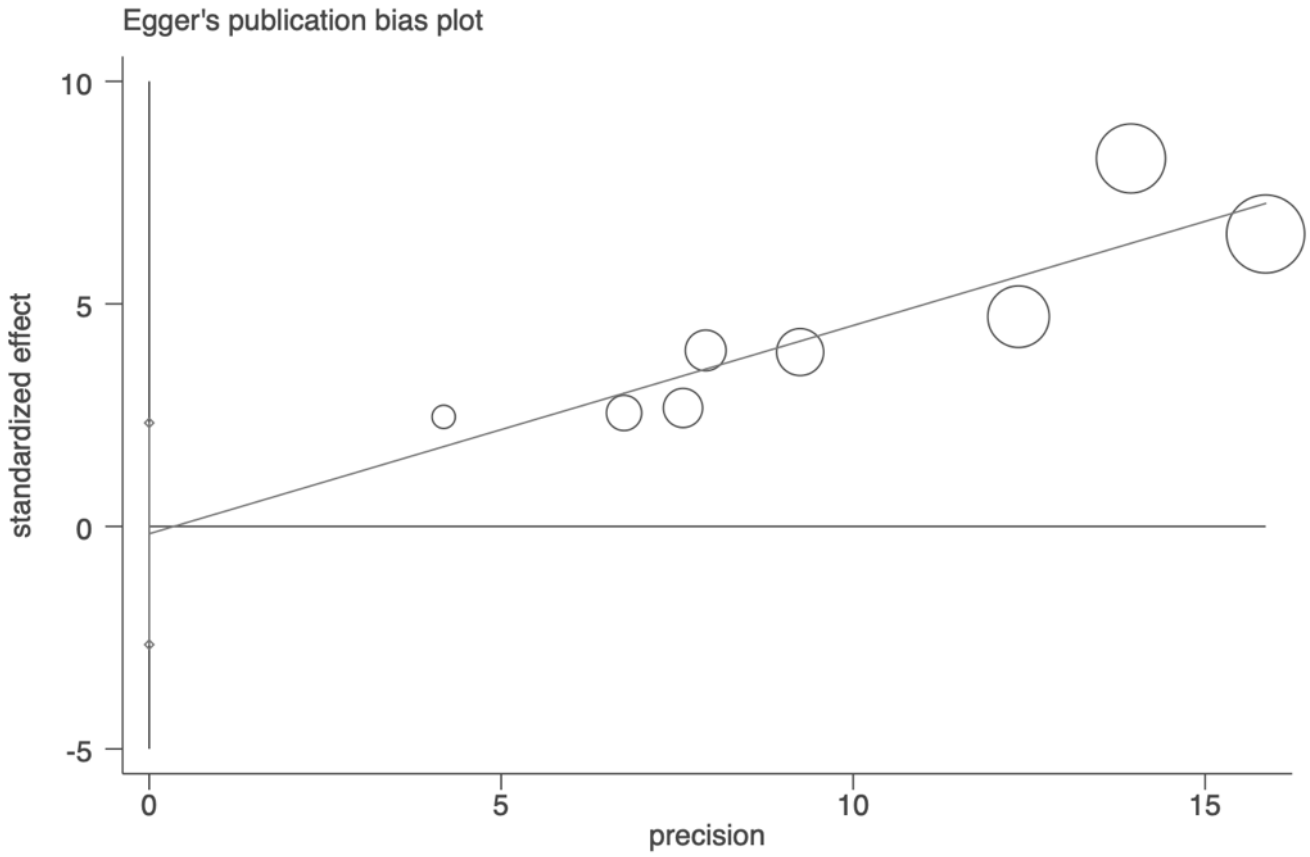

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
-.5
0
.2
.4
s.e. of: ES


Egger's publication bias plot
standardized effect
10
5
0
0
5
10
15
precision

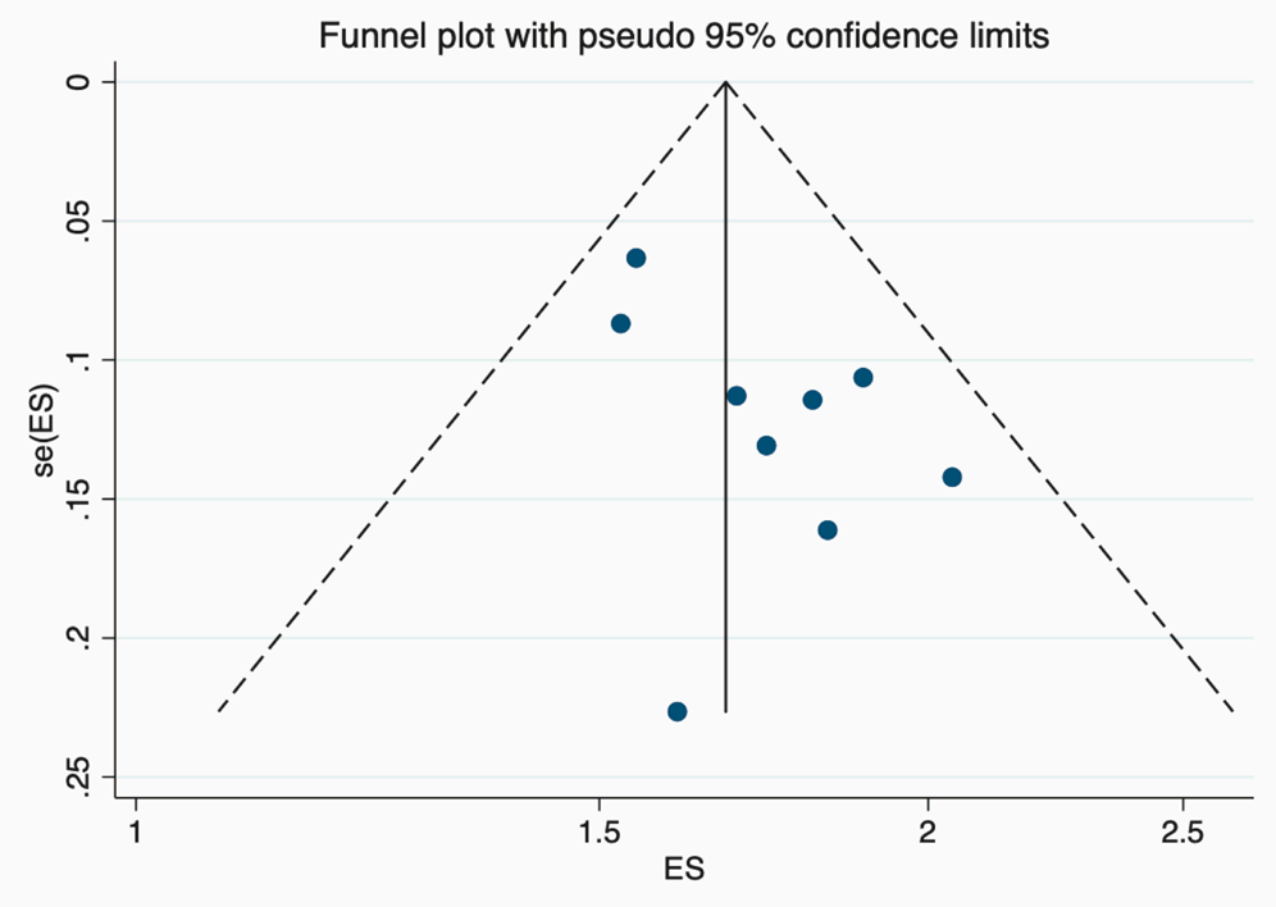
Supplementary Figure S20: Publication bias of cs-free remission in the 24-week maintenance in Crohn's disease

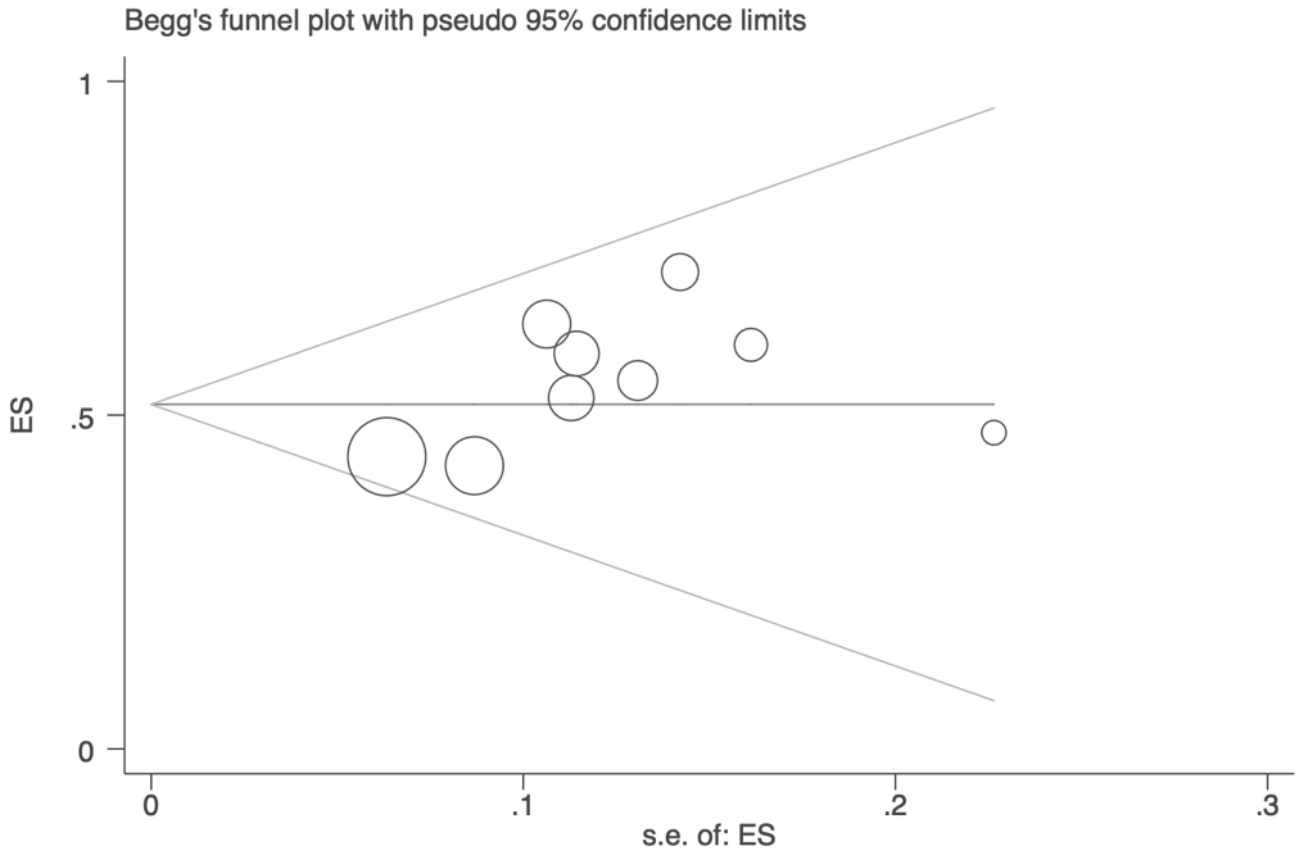


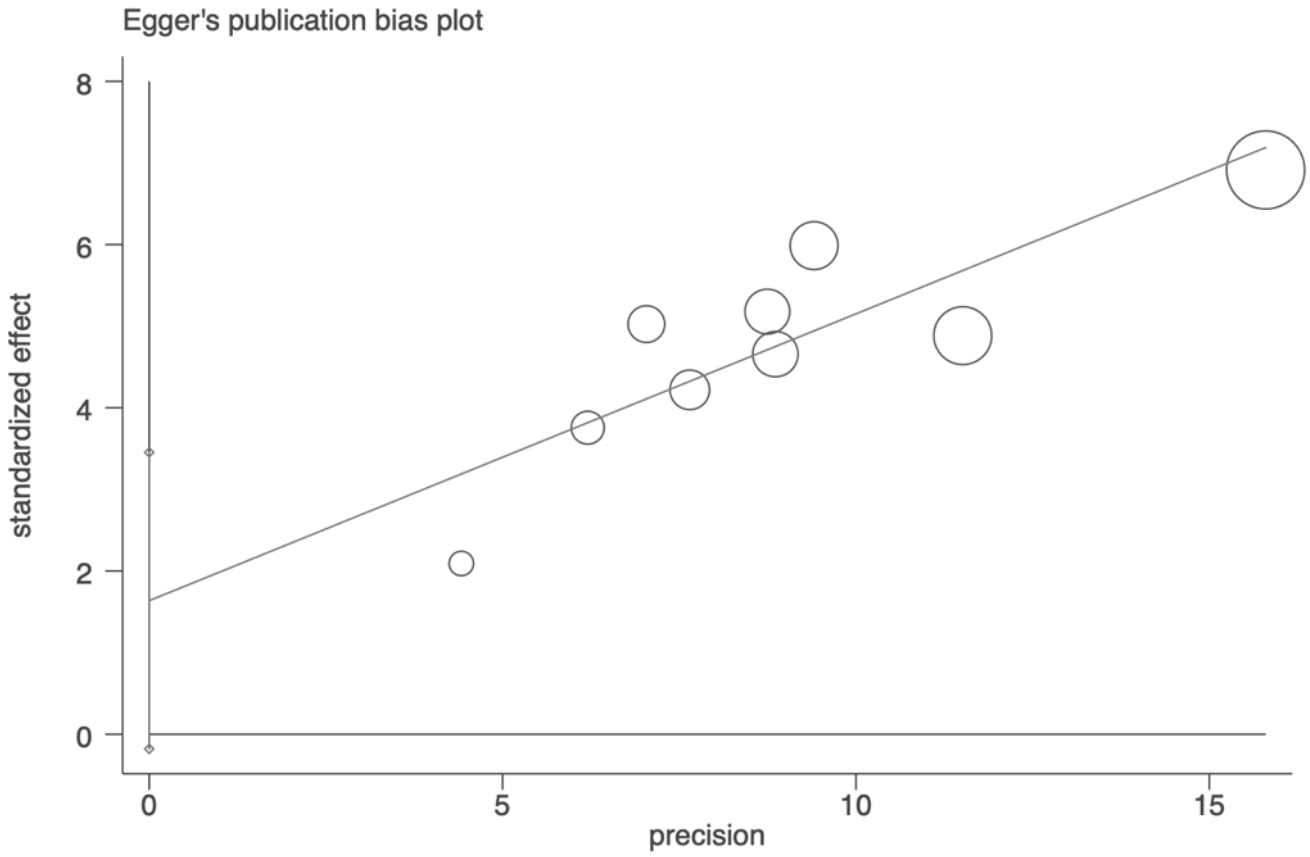

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
0
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.3
s.e. of: ES


Egger's publication bias plot
standardized effect
10
5
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-5
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5
10
15
precision

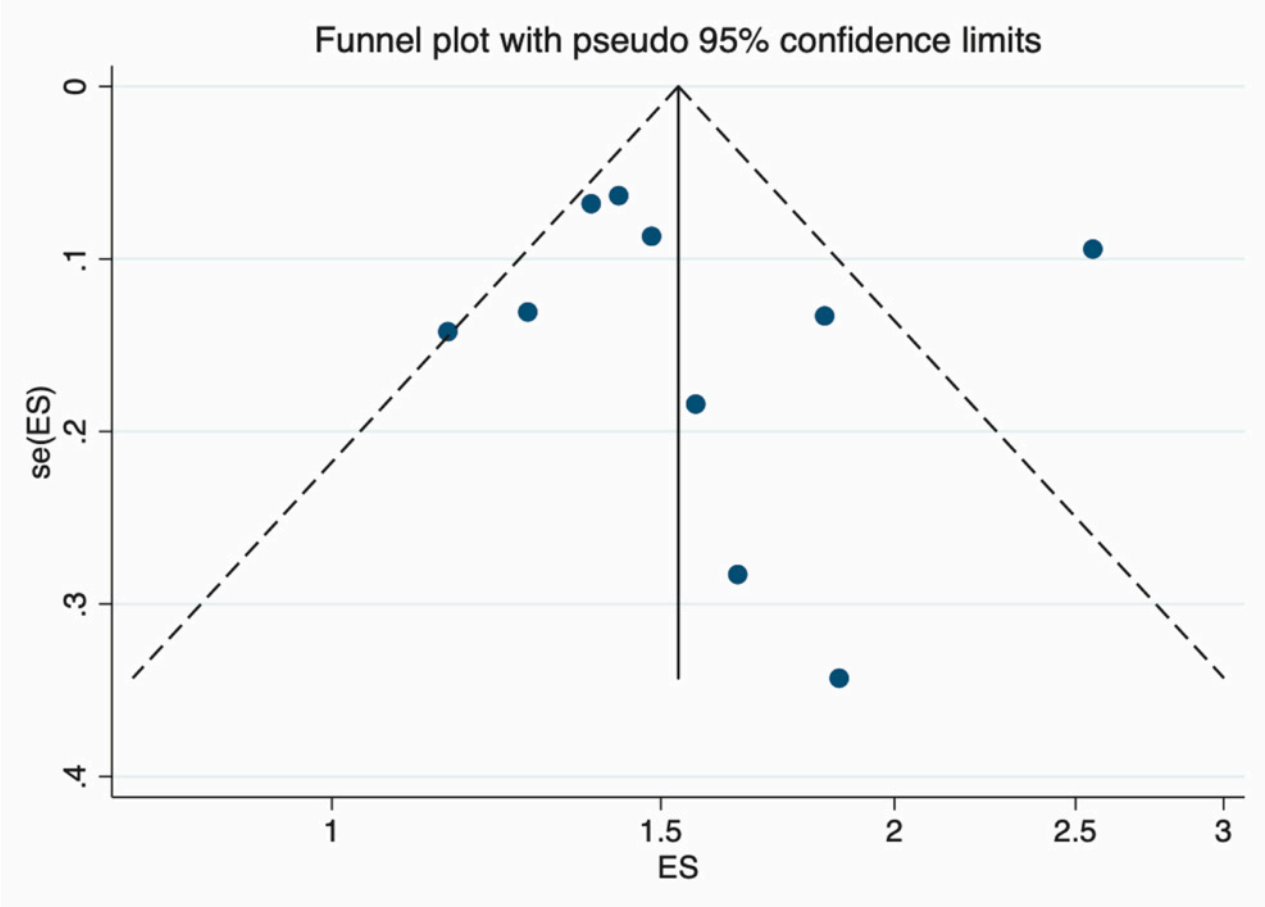
Supplementary Figure S21: Publication bias of clinical resopone in the 1-year maintenance in Crohn’s disease

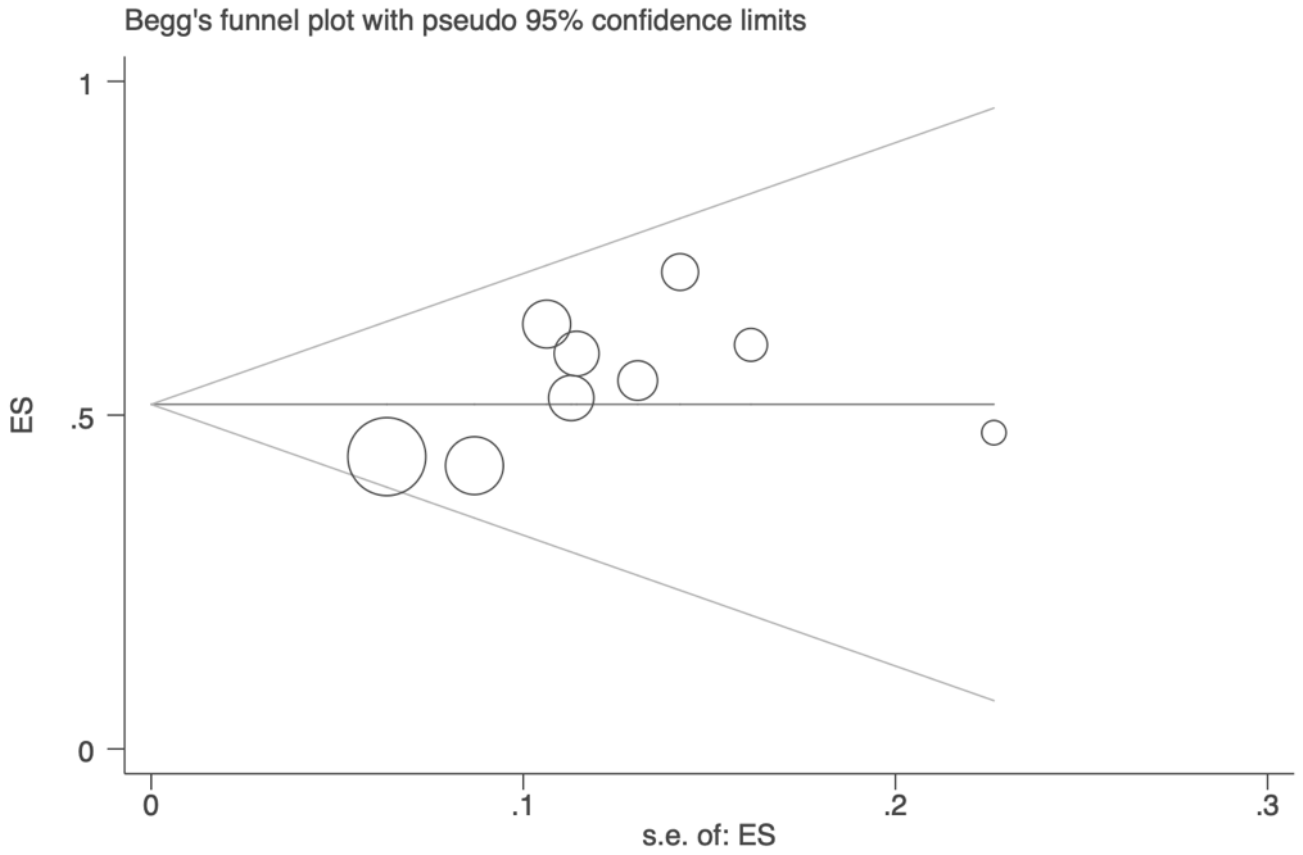


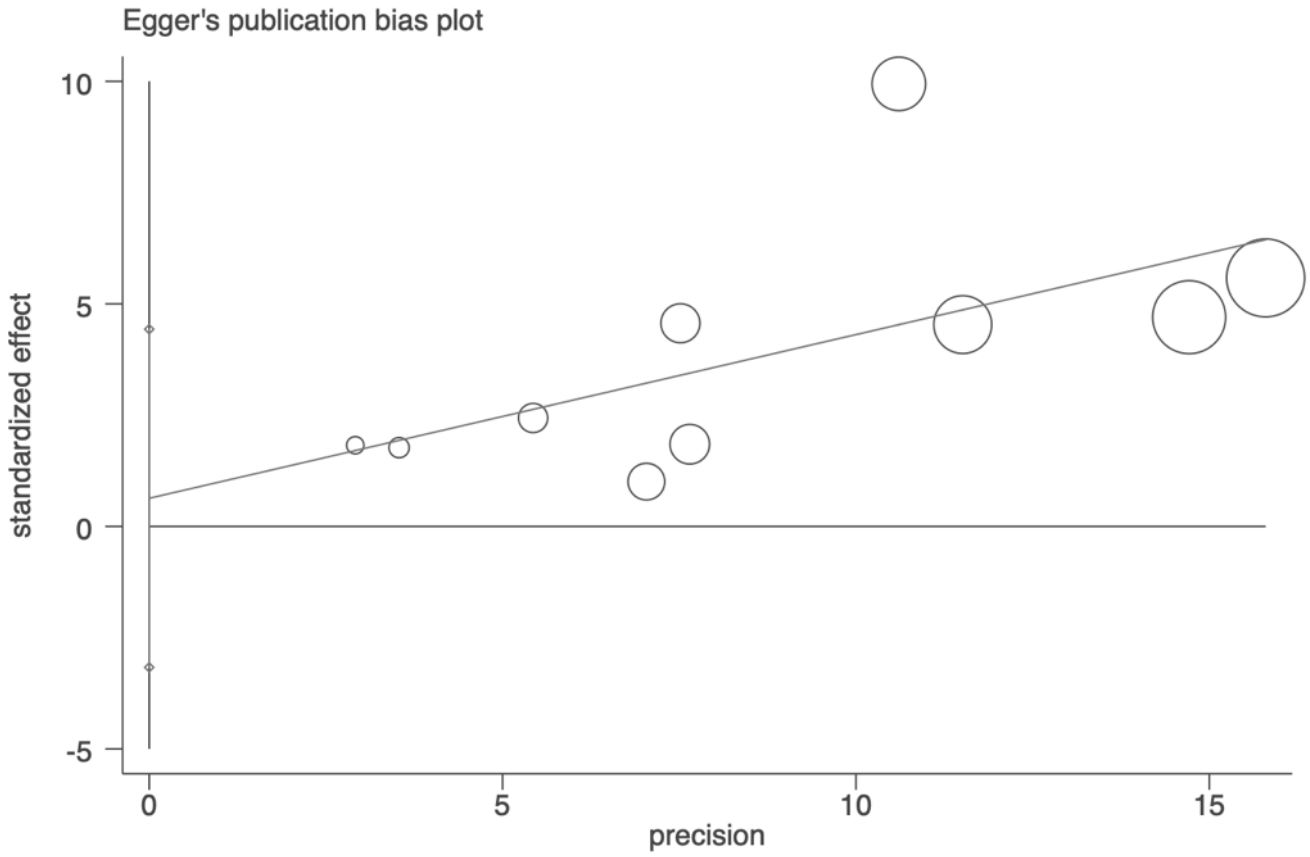

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
0
.1
.2
.3
s.e. of: ES


Egger's publication bias plot
standardized effect
precision
0
2
4
6
8
0
5
10
15

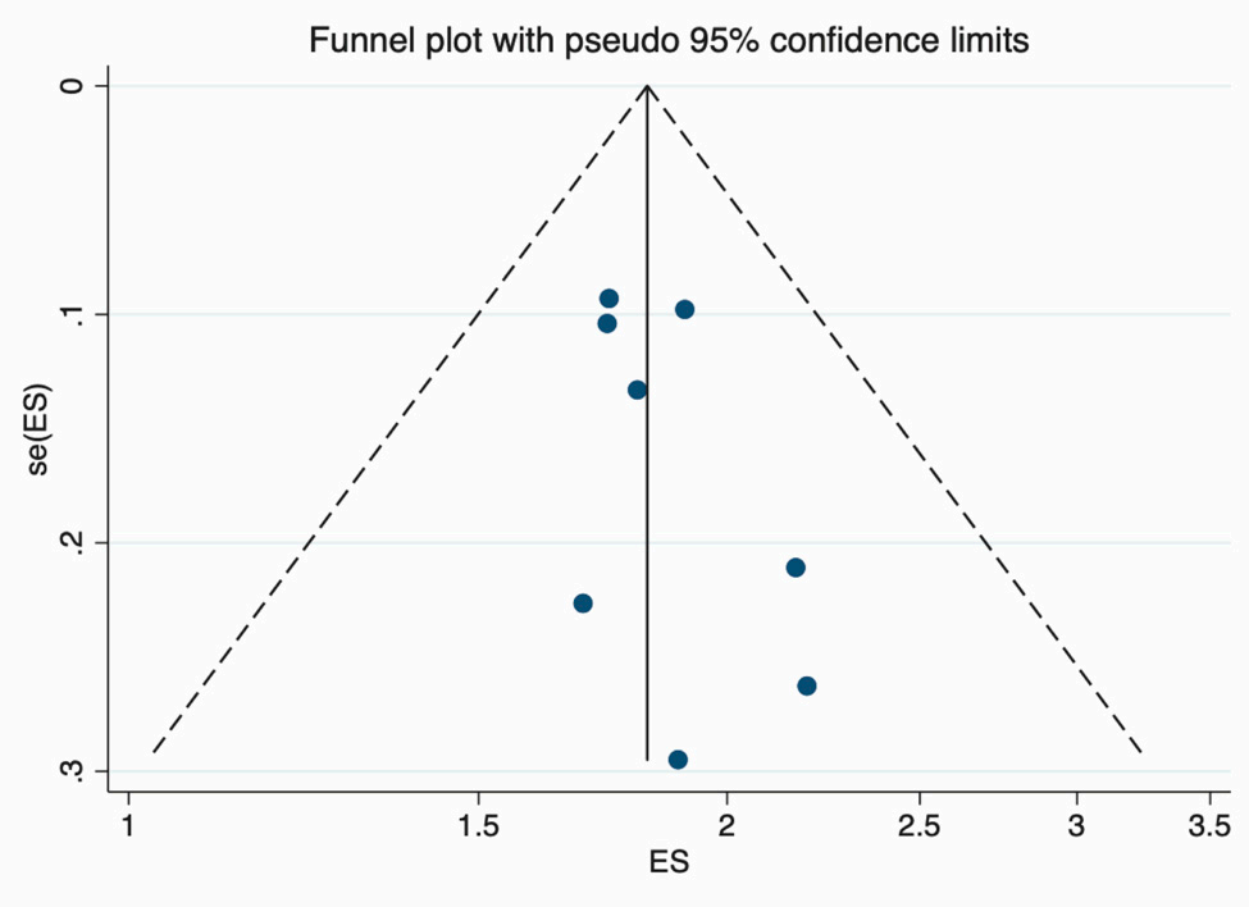
Supplementary Figure S22: Publication bias of clinical remission in the 1-year maintenance in Crohn's disease

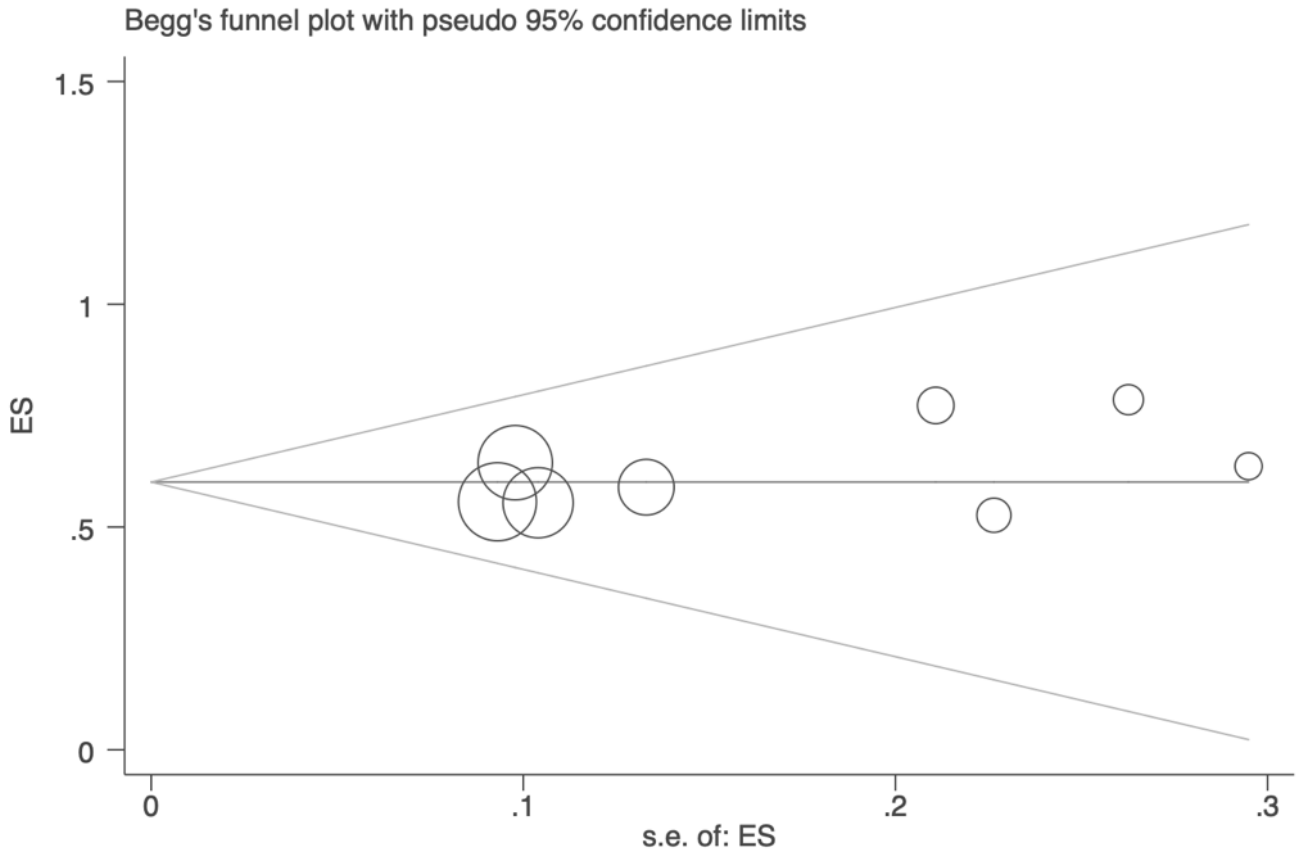


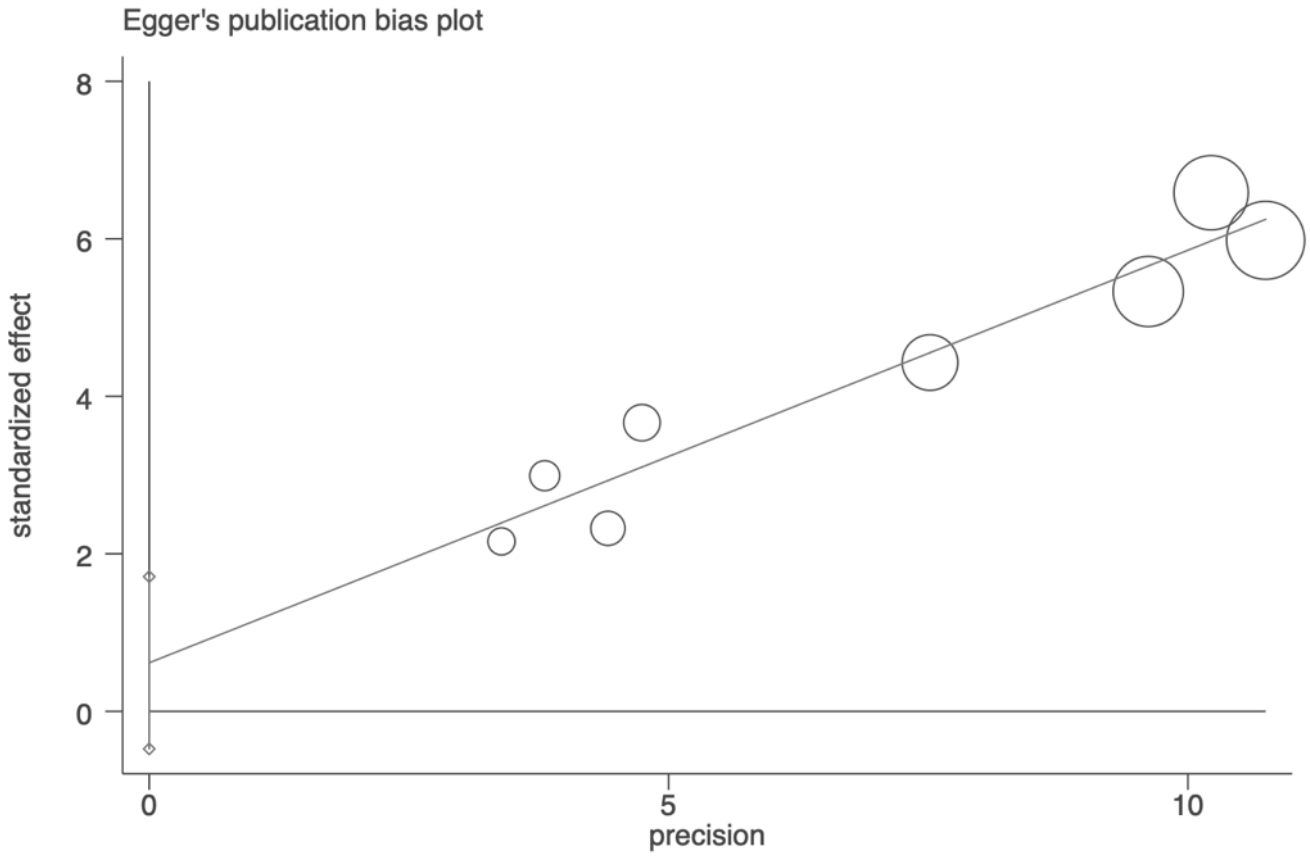

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
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0
.1
.2
.3
s.e. of: ES


Egger's publication bias plot
standardized effect
10
5
0
-5
0
5
10
15
precision

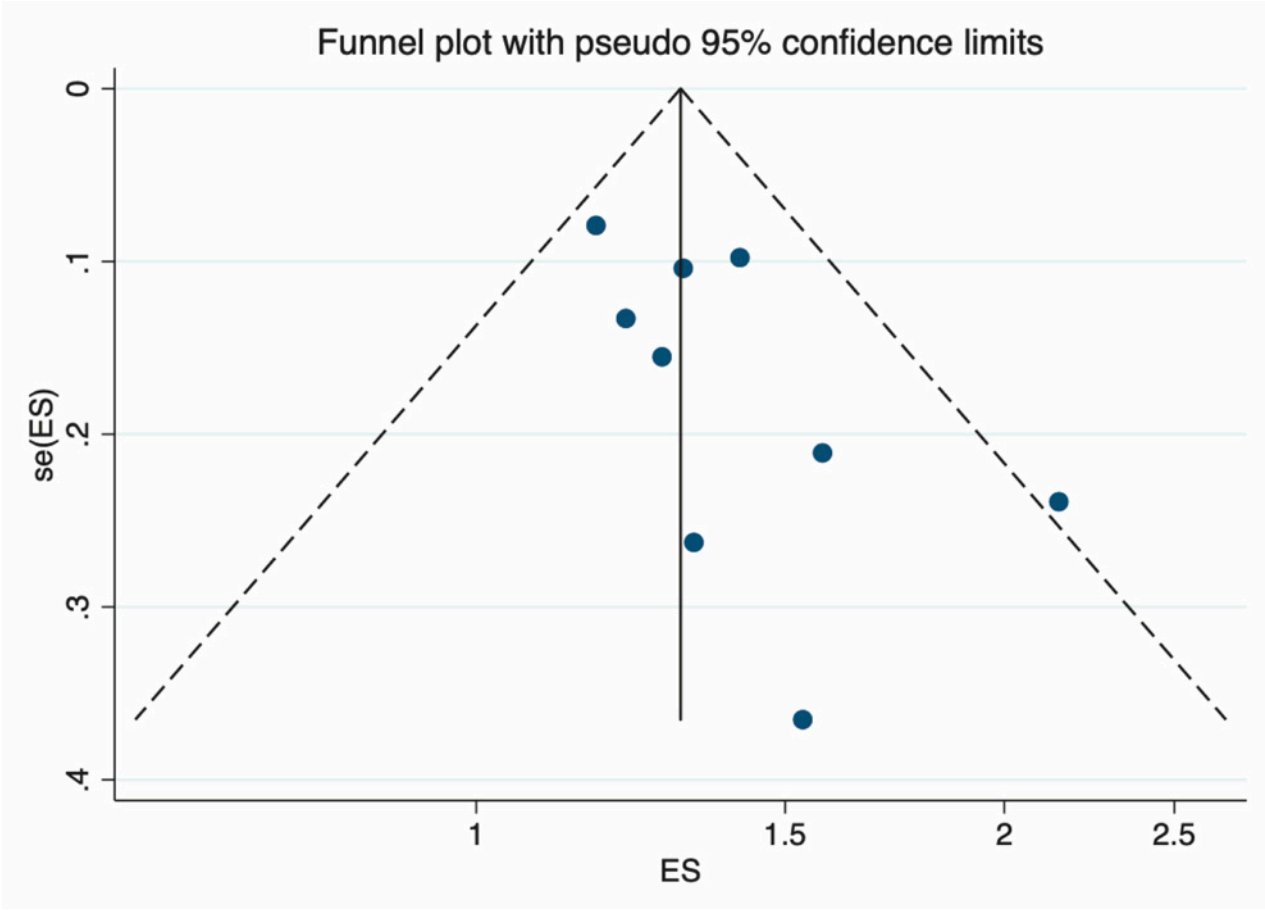
Supplementary Figure S23: Publication bias of endoscopic response in the 1-year maintenance in Crohn's disease

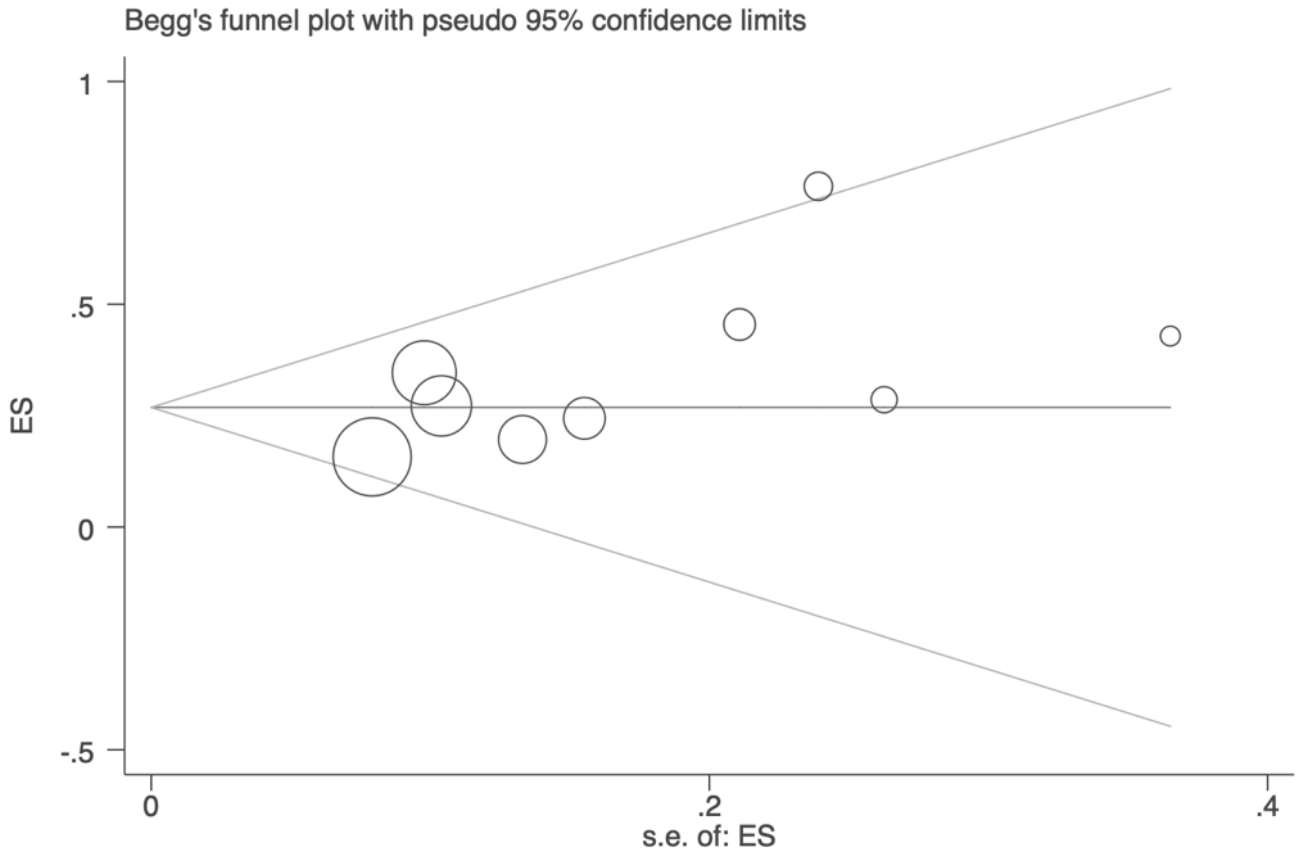


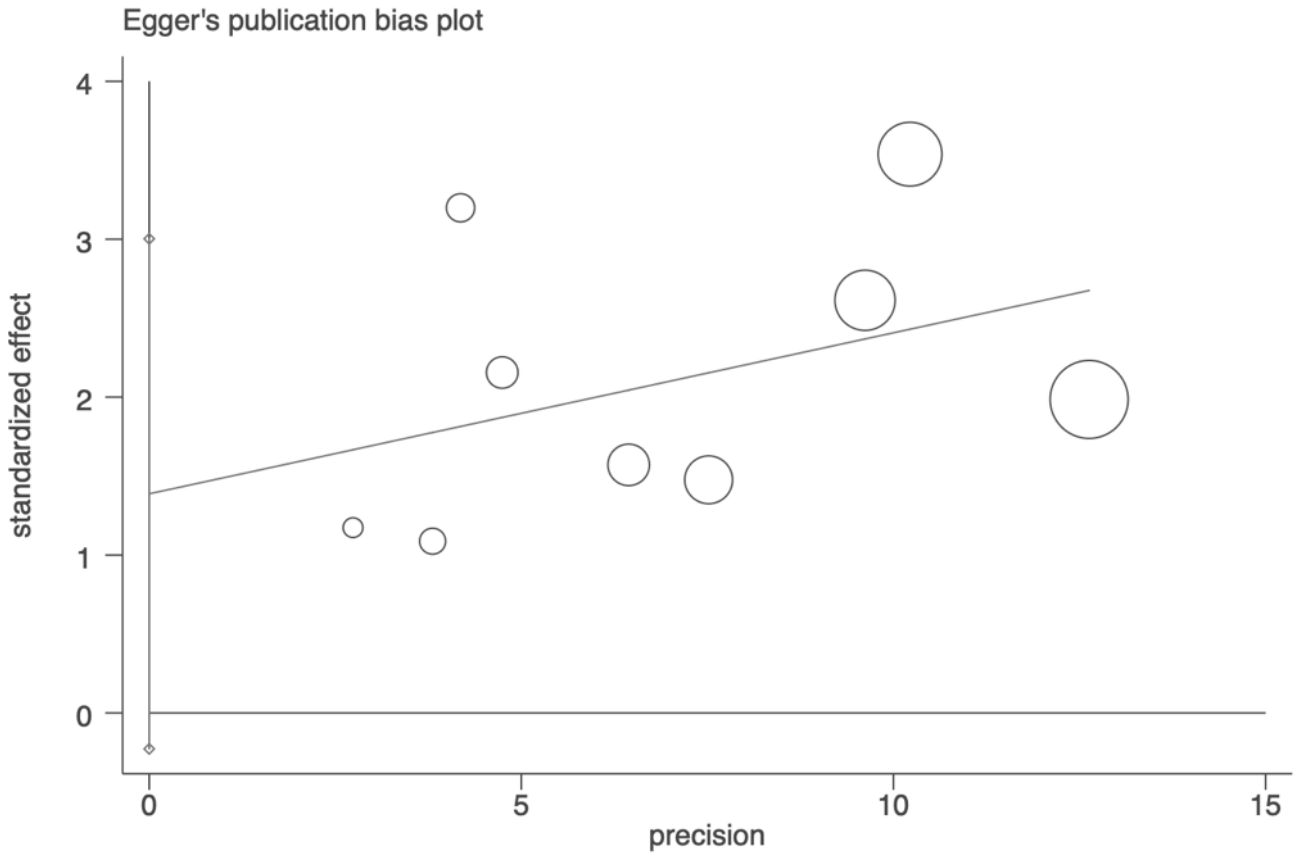

Begg's funnel plot with pseudo 95% confidence limits
1.5
1
.5
0
ES
0
.1
.2
.3
s.e. of: ES


Egger's publication bias plot
standardized effect
8
6
4
2
0
0
5
10
precision

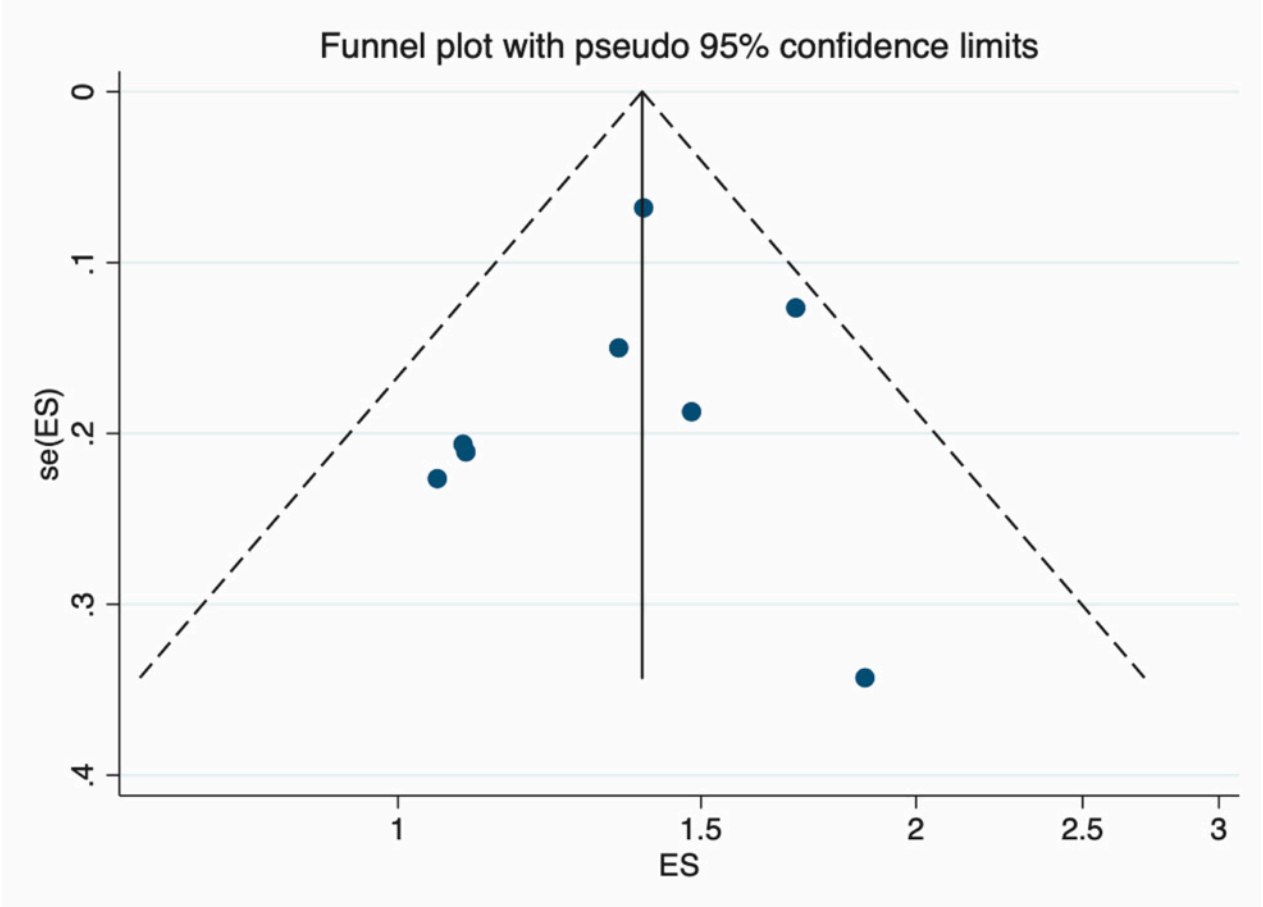
Supplementary Figure S24: Publication bias of endoscopic remission in the 1-year maintenance in Crohn's disease

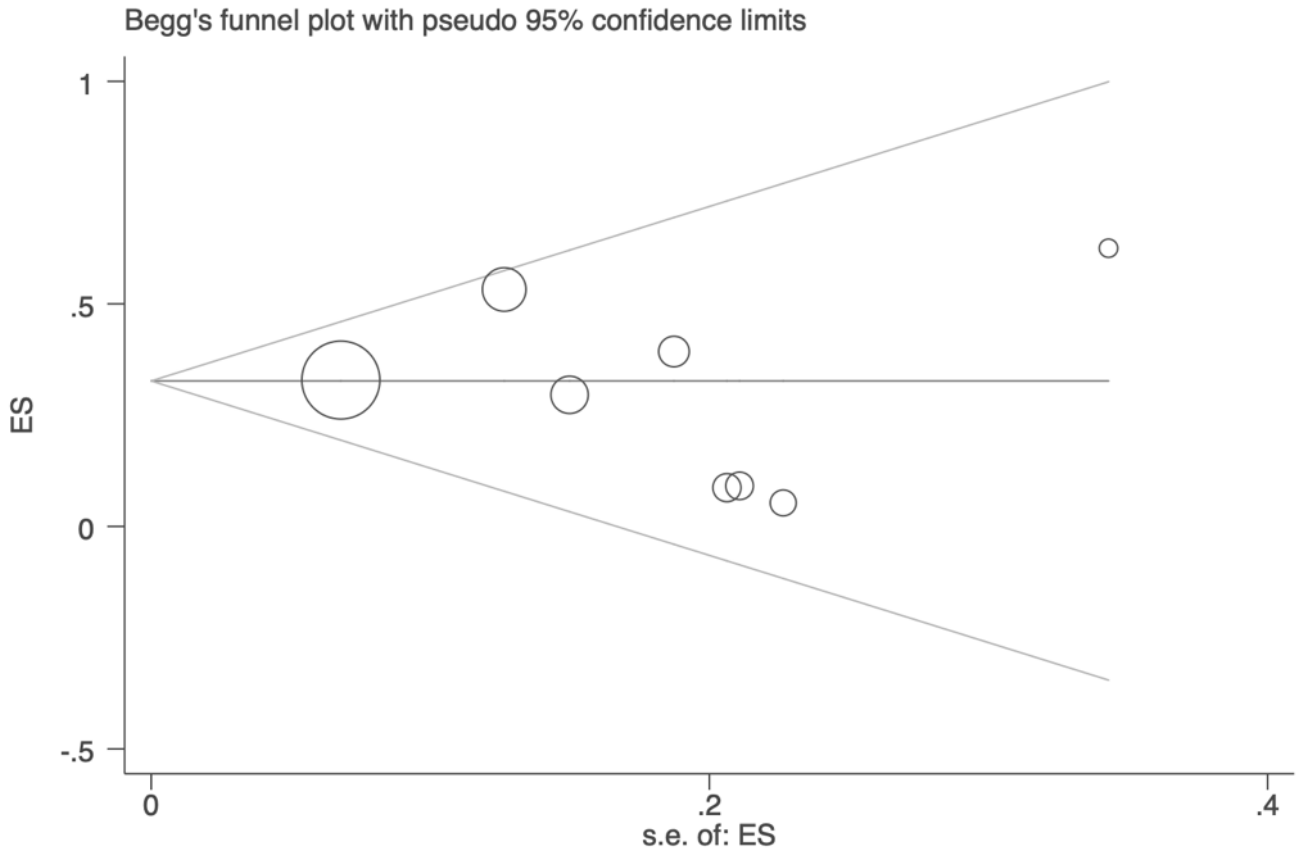


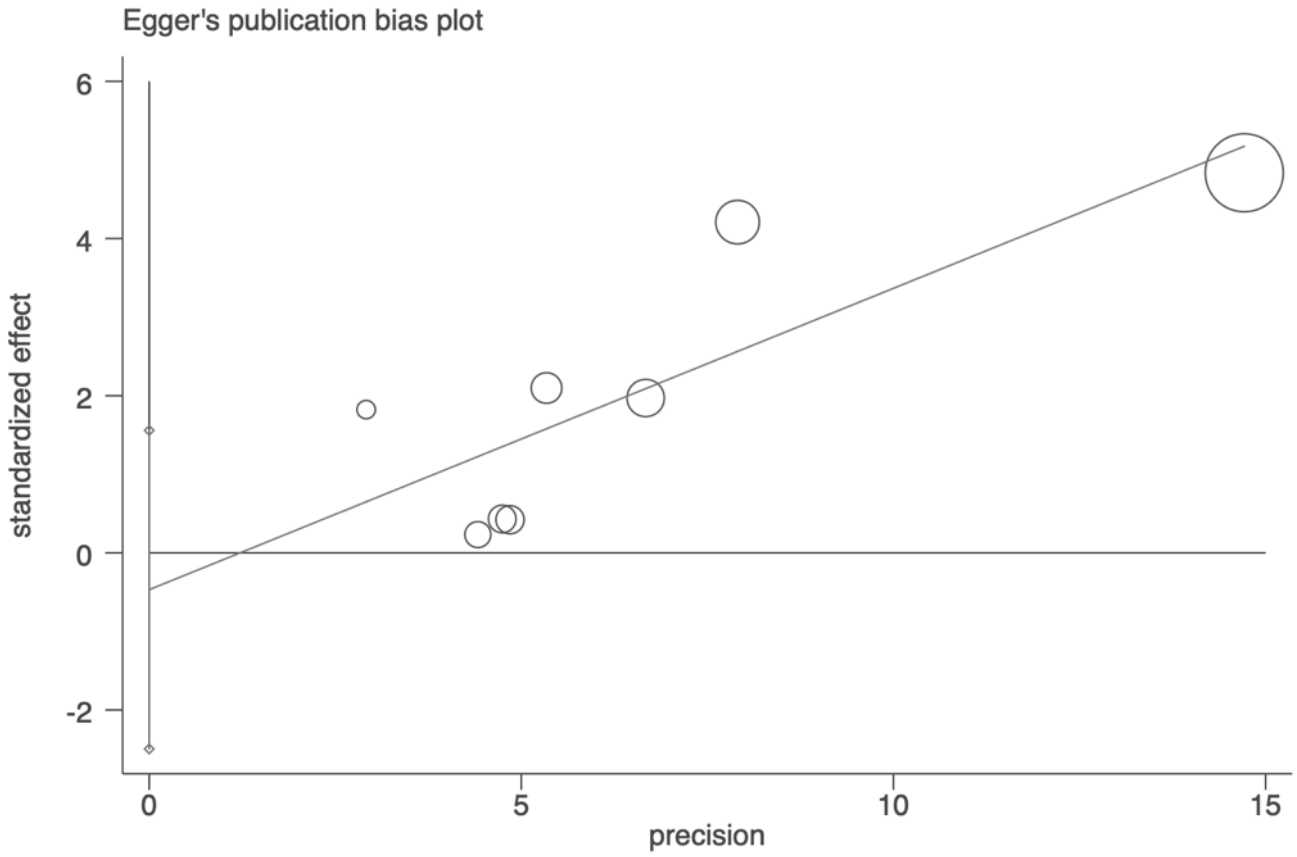

Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
-.5
0
.2
.4
s.e. of: ES


Egger's publication bias plot
standardized effect
4
3
2
1
0
0
5
10
15
precision

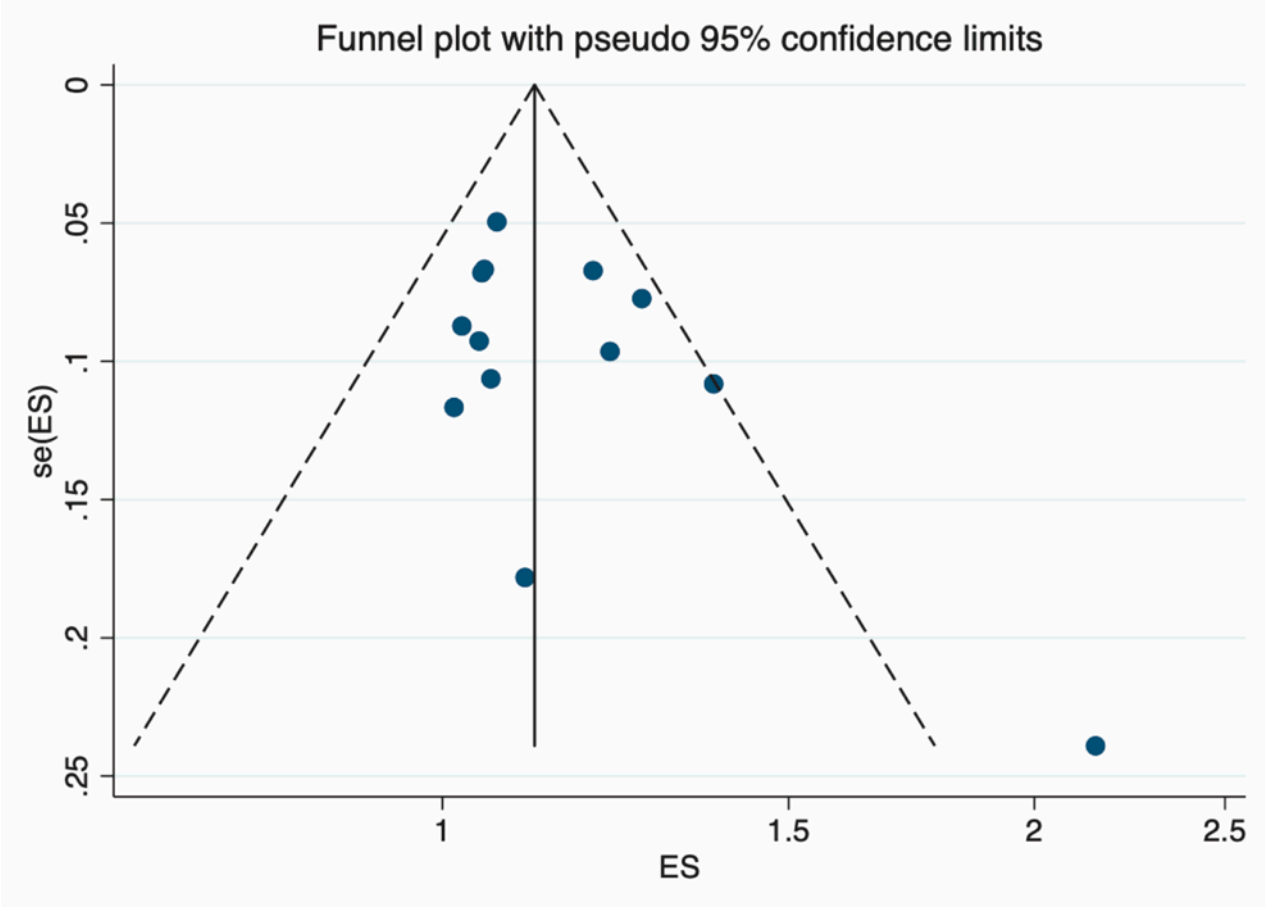
Supplementary Figure S25: Publication bias of mucosal healing in the 1-year maintenance in Crohn's disease

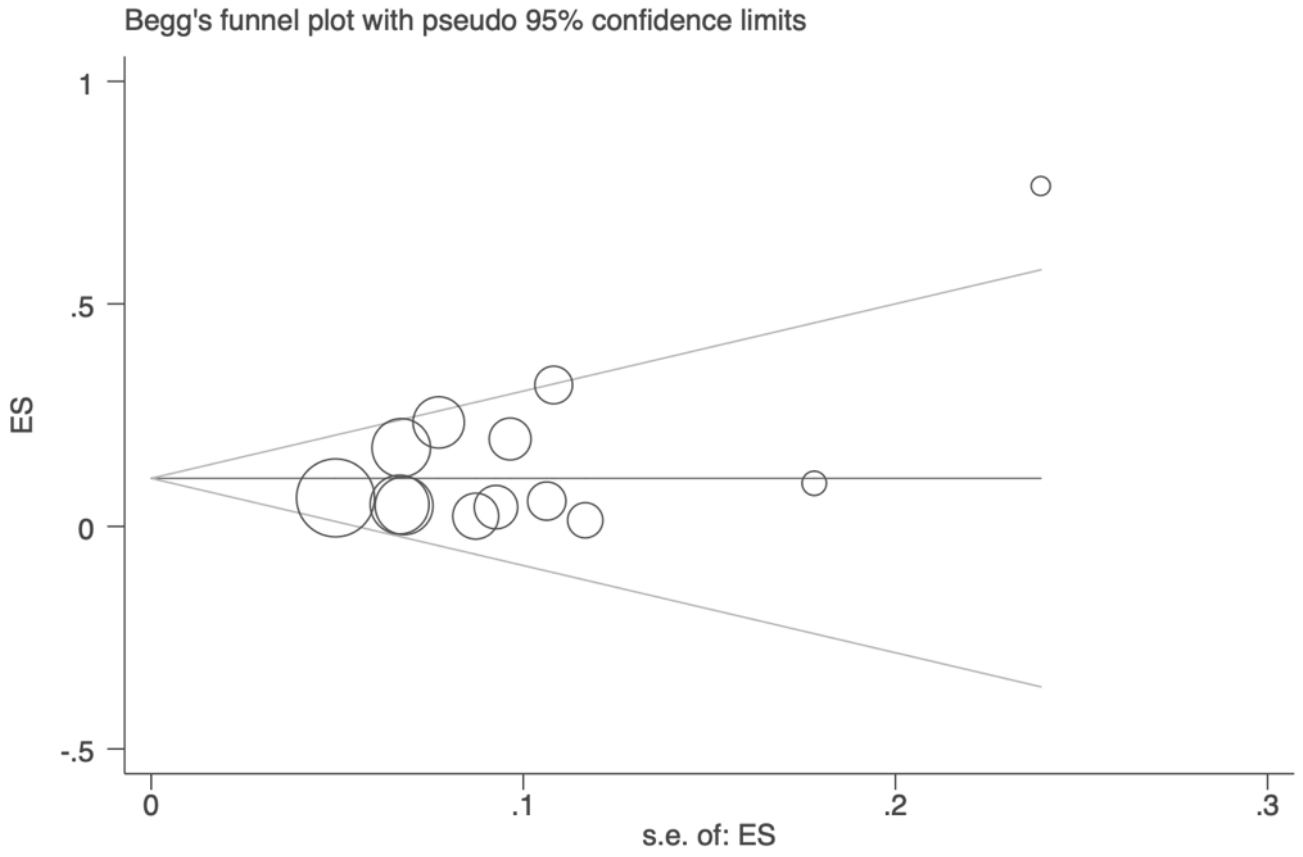


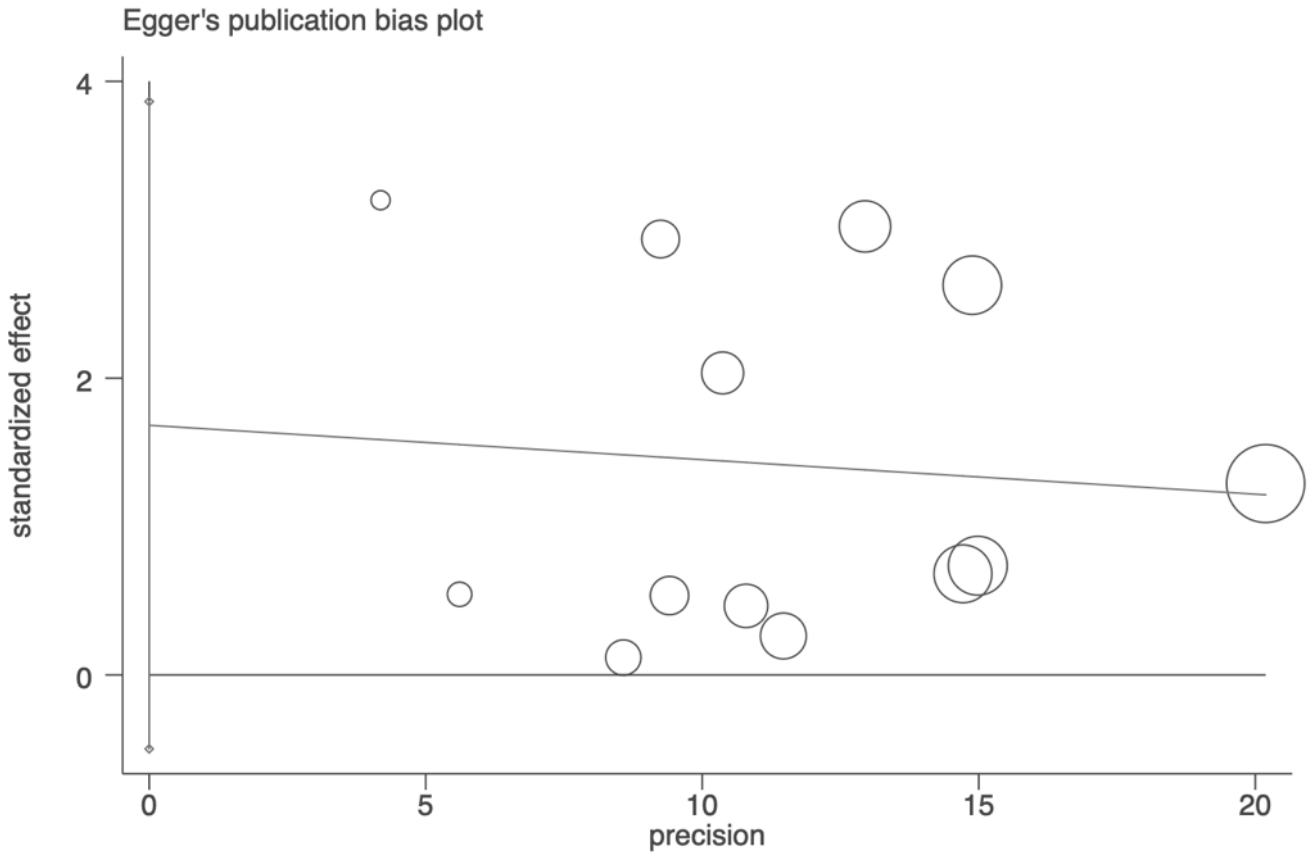

Begg's funnel plot with pseudo 95% confidence limits
1
.5
0
-.5
ES
0
.2
.4
s.e. of: ES


Egger's publication bias plot
standardized effect
6
4
2
0
-2
0
5
10
15
precision

Supplementary Figure S26: Publication bias of adverse events in Crohn's disease




Begg's funnel plot with pseudo 95% confidence limits
ES
1
.5
0
-.5
0
.1
.2
.3
s.e. of: ES


Egger's publication bias plot
standardized effect
4
2
0
0
5
10
15
20
precision