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S.1 Pre-BMI

1.1 Meta-analysis summary

Meta-analysis summary Random-effects model

Method: DerSimonian-Laird

Number of studies = 9 Heterogeneity:

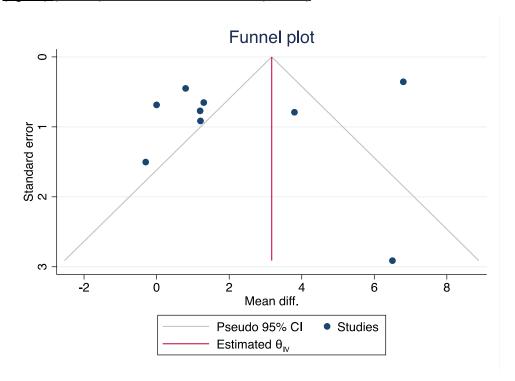
> tau2 = 9.7052 I2 (%) = 95.55 H2 = 22.48

	Study	Mean Diff.	[95% Conf.	Interval]	% Weight
Torres	et al	3.800	2.249	5.351	11.71
Cottam	et al	1.300	0.022	2.578	11.94
Sessa	et al	6.500	0.790	12.210	6.65
Arrue del cid	et al	1.210	-0.583	3.003	11.47
Enochs	et al	1.200	-0.311	2.711	11.74
Surve	et al	-0.300	-3.246	2.646	10.11
Verhoef	et al	6.800	6.103	7.497	12.30
Clapp	et al	0.000	-1.345	1.345	11.88
Hage	et al	0.800	-0.082	1.682	12.21
	theta	2.216	0.060	4.371	

Test of theta = 0: z = 2.01Test of homogeneity: Q = chi2(8) = 179.81 Prob > |z| = 0.0439

Prob > Q = 0.0000

1.2 Funnel plot and Egger's test showing publication bias; Mean difference pre-BMI (kg/m²) (X-axis) with it is standard error (Y-axis)



Egger's test for small-study effects: Regress standard normal deviate of intervention effect estimate against its standard error

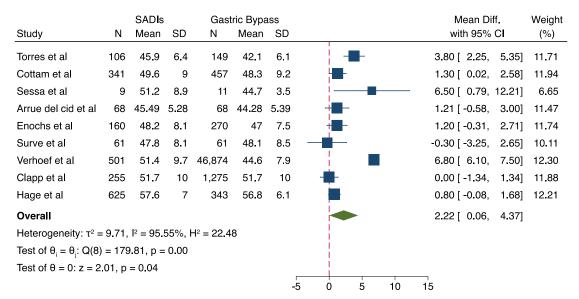
Number of studies =

Number of stud	dies = 9				Root MSE	= 4.383
Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	3.980251 -2.181482	2.345274		0.133	-1.565442 -10.45996	9.525944

Test of HO: no small-study effects

P = 0.553

1.3 Forest plot showing results of pre-BMI (kg/m²) mean difference metanalysis



Random-effects DerSimonian-Laird model

S.2 Post-BMI

2.1 Meta-analysis summary

Studies included: 5

Participants included: Unknown

Meta-analysis pooling of aggregate data using the random-effects inverse-variance model with DerSimonian-Laird estimate of \tan^2

name	Effect	[95% Conf.	Interval]	% Weight
Hage et al	-7.500	-8.588	-6.412	20.34
Surve et al	-5.000	-6.775	-3.225	18.86
Enochs et al	-2.400	-3.427	-1.373	20.45
Cottam et al	-2.300	-3.410	-1.190	20.30
Torres et al	-1.800	-3.044	-0.556	20.05
Overall, DL	-3.787	-6.039	-1.535	100.00

Test of overall effect = 0: z = -3.296 p = 0.001

Heterogeneity measures, calculated from the data with Conf. Intervals based on Gamma (random-effects) distribution for Q

Measure	Value	df	p-value
Cochran's Q	70.17	4	0.000
		-[95% Conf.	<pre>Interval]-</pre>
Н	4.188	1.368	7.094
I ² (%)	94.3%	46.6%	98.0%

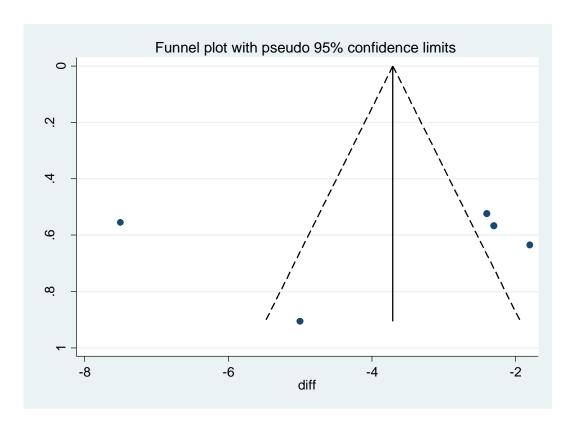
 ${\tt H}$ = relative excess in Cochran's Q over its degrees-of-freedom

 I^2 = proportion of total variation in effect estimate due to between-study heterogeneity (based on Q)

Heterogeneity variance estimates

Method	tau²
DL	6.1811

2.2 Funnel plot and Egger's test showing publication bias; Mean difference post-BMI (kg/m²) (X-axis) with it is standard error (Y-axis)



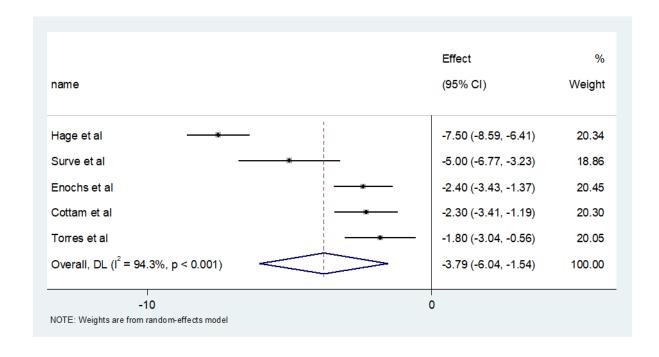
Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of studies = 5 Root MSE = 4.819

Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	-2.606134 -1.851368	7.576147 12.54436	-0.34 -0.15	0.754	-26.71681 -41.77312	21.50455

Test of H0: no small-study effects P = 0.892

2.3 Forest plot showing results of post-BMI (kg/m²) mean difference meta-analysis



S.3 Total weight loss (TWL)

3.1 Meta-analysis summary

Meta-analysis summary
Random-effects model

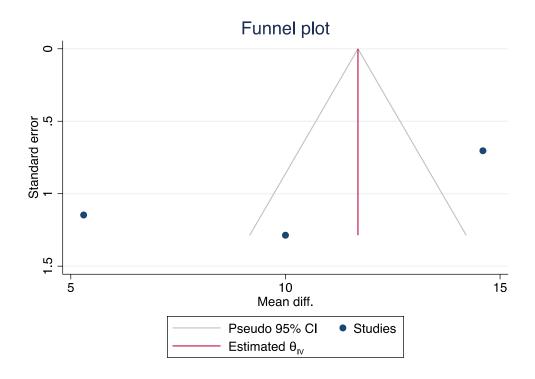
Number of studies =
Heterogeneity:

H2 = **24.93**

Study	Mean Diff.	[95% Conf.	Interval]	% Weight
Torres et al Surve et al Hage et al	10.000 5.300 14.600	7.478 3.052 13.221	12.522 7.548 15.979	32.70 33.12 34.18
theta	10.016	4.208	15.823	

Test of theta = 0: z = 3.38Test of homogeneity: Q = chi2(2) = 49.85 Prob > |z| = 0.0007Prob > Q = 0.0000

3.2 Funnel plot and Egger test showing publication bias; Mean difference TWL (X-axis) with it is standard error (Y-axis)



Egger's test for small-study effects: Regress standard normal deviate of intervention effect estimate against its standard error

Number of studies = 3

Root MSE = 4.094

Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	24.75591 -13.80095				-106.0792 -145.1575	155.591 117.5556

Test of H0: no small-study effects P = 0.409

3.3 Forest plot showing results of TWL (kg/m²) mean difference metanalysis

		SADIs		Gas	stric By	oass	Mean Diff.	Weight
Study	Ν	Mean	SD	Ν	Mean	SD	with 95% CI	(%)
Torres et al	106	38.7	10.7	149	28.7	9.7	— — — 10.00 [7.48, 12.52] :	32.70
Surve et al	61	37.8	4.9	61	32.5	7.5	5.30 [3.05 , 7.55]	33.12
Hage et al	625	40.4	9.1	343	25.8	12.6	14.60 [13.22, 15.98]	34.18
Overall							10.02 [4.21, 15.82]	
Heterogenei	ity: τ² :	= 25.19,	$I^2 = 9$	5.99%	$H^2 = 2$	4.93		
Test of $\theta_i = \theta_i$	9 _j : Q(2) = 49.8	5, p =	0.00				
Test of $\theta = 0$): z = 3	3.38, p =	0.00					
							0 2 4 6 8 10 12 14 16 18 20	

Random-effects DerSimonian-Laird model

S.4 Excess weight loss

4.1. Meta-analysis summary

Meta-analysis pooling of aggregate data using the random-effects inverse-variance model with DerSimonian-Laird estimate of tau²

name	Effect	[95% Conf.	Interval]	% Weight
Surve et al.	11.100	7.169	15.031	27.03
Enochs et al.	10.300	6.193	14.407	26.16
Cottam et al.	6.200	2.483	9.917	28.11
Torres et al.	15.300	9.434	21.166	18.70
Overall, DL	10.299	6.907	13.691	100.00

Test of overall effect = 0: z = 5.951 p = 0.000

Heterogeneity measures, calculated from the data

with Conf. Intervals based on Gamma (random-effects) distribution for $\ensuremath{\mathtt{Q}}$

Measure	Value	df	p-value
Cochran's Q	7.45	3	0.059
		-[95% Conf.	Interval]-
H	1.576	1.000	2.798
I ² (%)	59.8%	0.0%	87.2%

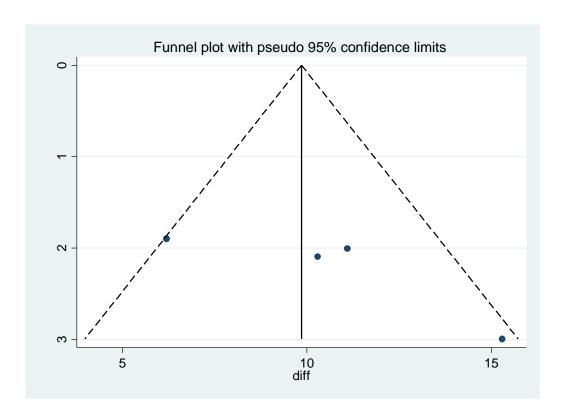
H = relative excess in Cochran's Q over its degrees-of-freedom

 ${ t I}^2$ = proportion of total variation in effect estimate due to between-study heterogeneity (based on Q)

Heterogeneity variance estimates

Method	tau²
DL	7.0591

4.2. <u>Funnel plot and Egger's test showing publication bias; Mean difference EWL (X-axis) with it is standard error (Y-axis)</u>

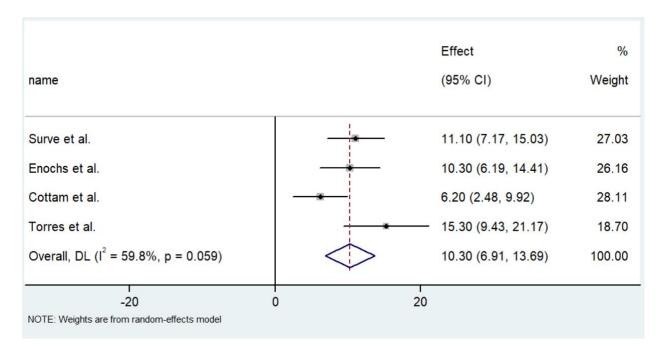


Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of stud	dies = 4				Root MSE	= 1.093
Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	-5.066326 7.034679	7.343567 3.416924	-0.69 2.06	0.562 0.176	-36.66315 -7.667157	26.53049 21.73652

Test of H0: no small-study effects P = 0.176

4.3. Forest-plot showing results of excess weight loss meta-analysis



S.5 Diabetes Mellitus remission

5.1. Meta-analysis summary

Meta-analysis pooling of Odds Ratios using the random-effects inverse-variance model with DerSimonian-Laird estimate of \tan^2

name	Odds Ratio	[95% Conf.	Interval]	% Weight
Hage et al. Enochs et al. Cottam et al. Torres et al. Arrue del cid et al.	6.844 7.348 2.567 2.562 1.653	3.824 1.892 1.391 1.384 0.522	12.248 28.543 4.740 4.743 5.234	25.56 11.15 24.77 24.70 13.81
Overall, DL	3.488	2.022	6.018	100.00

Test of overall effect = 1: z = 4.491 p = 0.000

Heterogeneity measures, calculated from the data with Conf. Intervals based on Gamma (random-effects) distribution for Q

Measure	Value	df	p-value
Cochran's Q	9.83	4	0.043
		-[95% Conf.	Interval]-
H	1.568	1.000	2.669
I ² (%)	59.3%	0.0%	86.0%

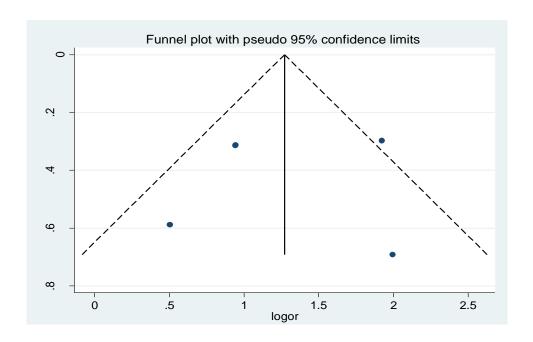
H = relative excess in Cochran's Q over its degrees-of-freedom

 I^2 = proportion of total variation in effect estimate due to between-study heterogeneity (based on Q)

Heterogeneity variance estimates

Method	tau²
DL	0.2146

5.2. Funnel plot and Egger's test showing publication bias; diabetes mellitus remission (log OR)(X-axis) with it is standard error (Y-axis)

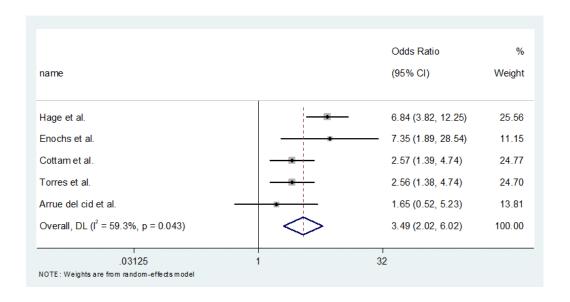


Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number	of stud	dies = 5				Root MSE	= 1.805
S	td_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
	slope bias	1.391467 3435858	.9751624 2.640478	1.43 -0.13	0.249	-1.711935 -8.746767	4.494869 8.059595

Test of H0: no small-study effects P = 0.905

5.3. Forest plot showing results of diabetes mellitus remission meta-analysis



S.6 Hypertension remission

6.1. Meta-analysis summary

Studies included: 2

Participants included: 512

Meta-analysis pooling of Odds Ratios using the random-effects inverse-variance model with DerSimonian-Laird estimate of \tan^2

study	Odds Ratio	[95% Conf.	Interval]	% Weight
Hage et al. Arue del Cid et al.	8.159 1.703	5.114	13.018 3.357	51.28 48.72
Overall, DL	3.804	0.820	17.647	100.00

Test of overall effect = 1: z = 1.706 p = 0.088

Heterogeneity measures, calculated from the data with Conf. Intervals based on Gamma (random-effects) distribution for Q

Measure	Value	df	p-value
Cochran's Q	13.90	1 -[95% Conf.	0.000
Н	3.728	1.000	8.355
I ² (%)	92.8%	0.0%	98.6%

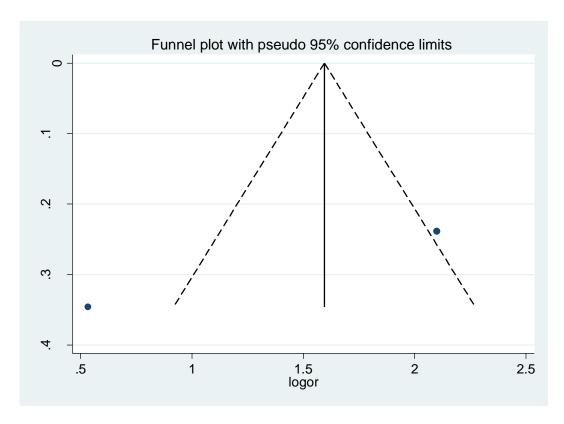
H = relative excess in Cochran's Q over its degrees-of-freedom

 I^2 = proportion of total variation in effect estimate due to between-study heterogeneity (based on Q)

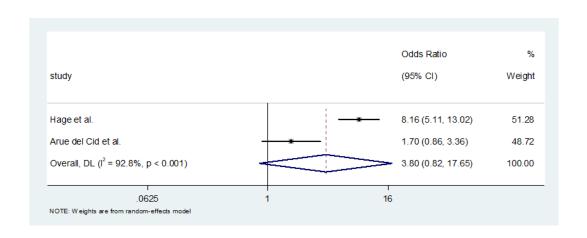
Heterogeneity variance estimates

Method	tau²
DL	1.1386

6.2. <u>Funnel plot showing publication bias; Hypertension remission (log OR)(X-axis)</u> with it is standard error (Y-axis)



6.3. Forest plot showing results of Hypertension remission metanalysis



S.7 Short-term postoperative complications

7.1. Meta-analysis summary

Meta-analysis summary

Random-effects model

Method: DerSimonian-Laird

Number of studies = 7

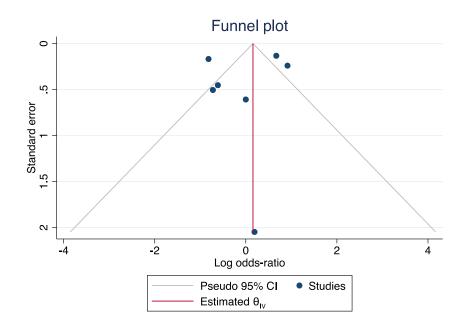
Heterogeneity:

tau2 = 0.7198

12 (%) = 90.75H2 = 10.81

Study	Odds Ratio	[95% Conf.	Interval]	% Weight
Cottam et al	0.441	0.318	0.613	18.55
Sessa et al	1.211	0.022	66.958	2.82
Arrue del cid et al	0.485	0.181	1.305	14.24
Surve et al	1.000	0.304	3.293	12.73
Verhoef et al	1.953	1.507	2.533	18.81
Clapp et al	2.498	1.560	3.998	17.84
Hage et al	0.541	0.223	1.314	15.00
exp(theta)	0.949	0.457	1.970	

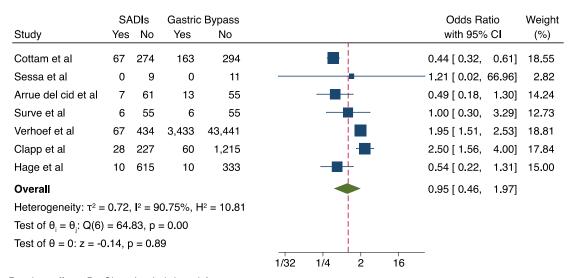
7.2. Funnel plot and Egger's test showing publication bias; short-term postoperative complications (log OR)(X-axis) with it is standard error (Y-axis)



Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of stud	dies = 7				Root MSE	= 3.525
Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	.3735103 -1.095809	.5617702 2.342295	0.66		-1.070566 -7.116871	1.817587
Test of HO: no	o small-study	effects	P =	= 0.660		

7.3. <u>Forest plot showing results of short-term postoperative complications metanalysis</u>



Random-effects DerSimonian-Laird model

H2 =

16.73

S.8 Long-term postoperative complications

8.1. Meta-analysis summary

Meta-analysis summary

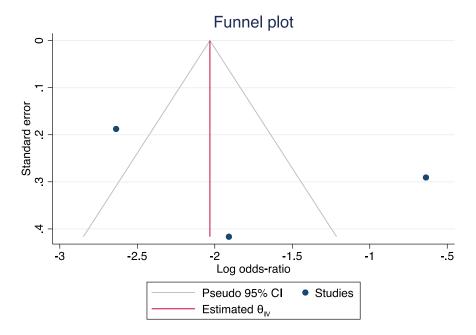
Random-effects model

Number of studies = 3

Heterogeneity:

Study	Odds Ratio	[95% Conf.	Interval]	% Weight
Cottam et al Surve et al	0.072 0.148	0.050 0.066	0.103 0.335	34.86 31.54
Hage et al	0.529	0.299	0.934	33.60
exp(theta)	0.176	0.047	0.663	

8.2. Funnel plot showing publication bias; long-term postoperative complications (log OR)(X-axis) with it is standard error (Y-axis)



Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of studies = 3

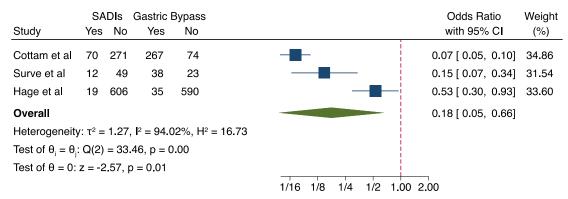
Root MSE = 4.629

Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias					-31.63045 -103.2412	

Test of HO: no small-study effects

P = 0.591

8.3. <u>Forest plot showing results of long-term postoperative complications metanalysis</u>



Random-effects DerSimonian-Laird model

S.9 Severe complications (Clavien-Dindo >3)

9.1. Meta-analysis summary

Studies included: 6

Participants included: 49982

Meta-analysis pooling of Odds Ratios using the random-effects inverse-variance model with DerSimonian-Laird estimate of \tan^2

name	Odds Ratio	[95% Conf.	Interval]	% Weight
Surve et al.	0.040	0.014	0.117	17.87
Cottam et al.	0.397	0.252	0.625	20.82
Arrue del cid et al.	1.000	0.195	5.139	14.44
Sessa et al.	1.222	0.022	67.923	5.42
Verhoef et al.	1.302	0.977	1.734	21.29
Clapp et al.	3.797	2.040	7.070	20.17
Overall, DL	0.651	0.221	1.916	100.00

Test of overall effect = 1: z = -0.779 p = 0.436

Heterogeneity measures, calculated from the data with Conf. Intervals based on Gamma (random-effects) distribution for Q

Measure	Value	df	p-value
Cochran's Q	71.81	5	0.000
		-[95% Conf.	Interval]-
H	3.790	1.000	6.982
I ² (%)	93.0%	0.0%	97.9%

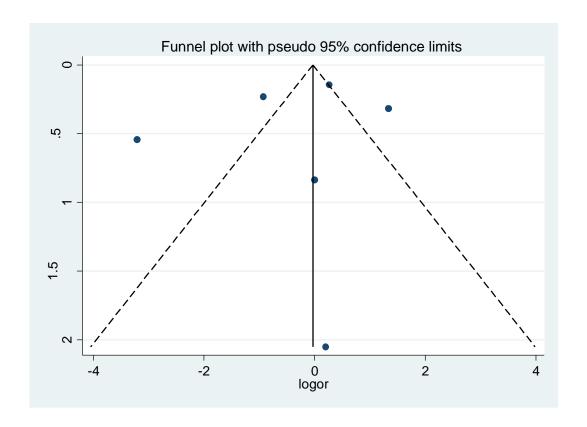
 ${\tt H}$ = relative excess in Cochran's ${\tt Q}$ over its degrees-of-freedom

 ${ t I}^2$ = proportion of total variation in effect estimate due to between-study heterogeneity (based on Q)

Heterogeneity variance estimates

Method	tau²
DL	1.4050

9.2. Funnel plot and Egger's test showing publication bias; severe postoperative complications (log OR)(X-axis) with it is standard error (Y-axis)

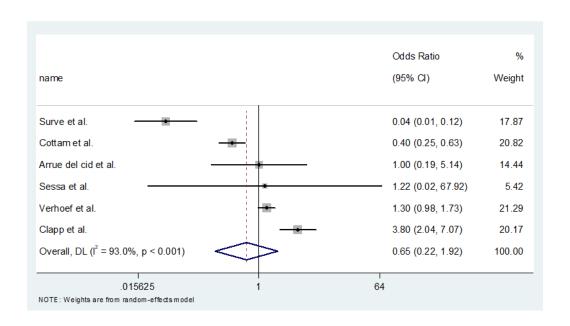


Egger's test for small-study effects:
Regress standard normal deviate of intervention
effect estimate against its standard error

Number of stud	dies = 5				Root MSE	= 4.577
Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	.5484756 -2.683182	1.023577 4.100492	0.54	0.629	-2.709002 -15.73278	3.805954 10.36641

Test of H0: no small-study effects P = 0.560

9.3. Forest plot showing results of severe complications metanalysis



S.10 Operative duration

10.1. Meta-analysis summary

Meta-analysis summary
Random-effects model

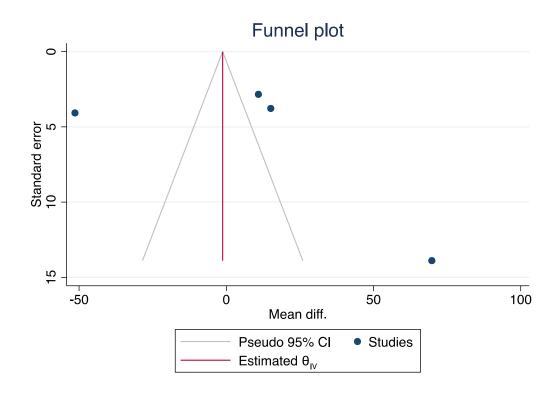
Number of studies =
Heterogeneity:

Method: DerSimonian-Laird tau2 = 1.3e+03I2 (%) = 98.60H2 = 71.61

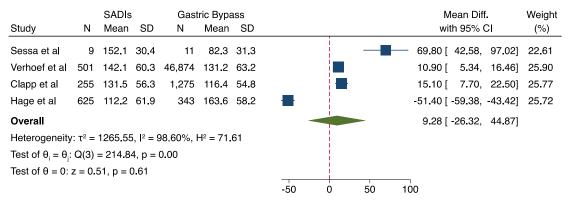
Study	Mean Diff.	[95% Conf.	Interval]	% Weight
Sessa et al	69.800	42.576	97.024	22.61
Verhoef et al	10.900	5.339	16.461	25.90
Clapp et al	15.100	7.698	22.502	25.77
Hage et al	-51.400	-59.383	-43.417	25.72
theta	9.276	-26.318	44.870	

Test of theta = 0: z = 0.51Test of homogeneity: Q = chi2(3) = 214.84 Prob > |z| = 0.6095Prob > Q = 0.0000

10.2 <u>Funnel plot showing publication bias; mean difference operative duration</u> (minutes) with it is standard error (Y-axis)



10.3. <u>Forest plot showing results of mean difference operative duration (minutes) metanalysis</u>



Random-effects DerSimonian-Laird model

S.11 Hospital stay

11.1. Meta-analysis summary

Meta-analysis summary
Random-effects model
Method: DerSimonian-Laird

Number of studies = 5
Heterogeneity:
tau2 = 0.5866

I2 (%) = 93.61 H2 = 15.64

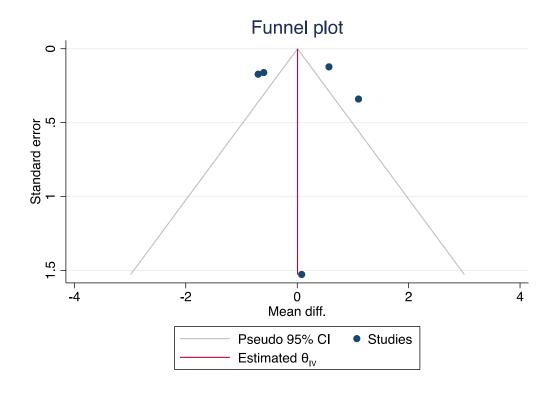
Study	Mean Diff.	[95% Conf.	Interval]	% Weight
Sessa et al	1.100	0.433 -2.914	1.767	21.30
Surve et al	-0.700	-1.038	-0.362	24.28
Clapp et al Hage et al	0.570 -0.600	0.330 -0.915	0.810 -0.285	24.87 24.43
theta	0.064	-0.694	0.822	

Test of theta = 0: z = 0.16Test of homogeneity: Q = chi2(4) = 62.58

Prob > |z| = 0.8693

Prob > Q = 0.0000

11.2. <u>Funnel plot showing publication bias; mean difference in hospital stay (days)</u> with it is standard error (Y-axis)



Egger's test for small-study effects: Regress standard normal deviate of intervention effect estimate against its standard error

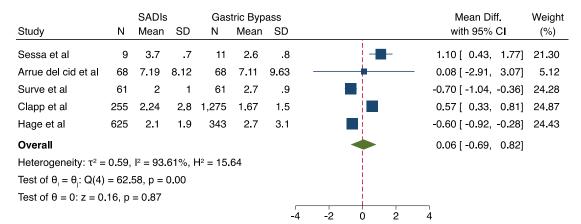
•				
Number	of	studies	=	į

Number of stud	dies = 5				Root MSE	= 3.747
Std_Eff	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
slope bias	5319491 2.005846	.8396643 3.817668	-0.63 0.53	0.571	-3.204136 -10.14368	2.140237

Test of HO: no small-study effects

P = 0.636

11.3. Forest plot showing results of hospital stay (days) metanalysis



Random-effects DerSimonian-Laird model

Supplementary material v.1

S.12. Assessment of methodological quality

Table 3. No	ewcastle-Ottawa sc	ore for the inc	cluded studies						
First author, year	Representativeness of cohort	Selection of non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of study	Comparability of cohorts on the basis of the design or analysis	Assessment of outcome	Was follow-up long enough for outcomes to occur	Adequacy of follow up of cohorts	Total score
Hage et al (2024)	*	*	*	*	*	*	*	*	8
Surve et al (2020)	*	*	*	*	*	*	*	*	8
Enochs et al (2019)	*	*	*	*	*	*	*	*	8
Cottam et al (2018)	*	*	*	*	*	*	*	*	8
Torres et al (2017)	*	*	*	*	*	*	*	*	8
Arrue del Cld et al (2019)	*	*	*	*	*	*	*	*	8
Verhoef et al (2022)*	*	*	*	*	*	*	*	*	8
Clapp et al (2022)*	*	*	*	*	*	*	*	*	8
Sessa et al (2019)*	*	*	*	*	*	*	*	*	8

^{*}This studies were evaluated just for preoperative variables, short-term complications, operative duration and hospital stay.

S.13. Studies excluded from the systematic review

Table 4. Studies excluded from the systematic review						
Study	PMID/DOI	Cause of exclusion				
Prospective multicentre randomised trial comparing the efficacy and safety of single- anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S) versus Roux- en-Y gastric bypass (RYGB): SADISLEEVE study protocol	35414539	Only protocol				
Comparison of Efficacy and Safety Between Roux-en-Y Gastric Bypass (RYGB) vs One Anastomosis Gastric Bypass (OAGB) vs Single Anastomosis Duodeno-ileal Bypass with Sleeve Gastrectomy (SADI-S): a Systematic Review of Bariatric and Metabolic Surgery	34981238	Review				
[Comparative results of various methods of surgical treatment of severe forms of metabolic syndrome].	22950270	SADI-S not included				
Evaluation of the Efficacy of Single Anastomosis Sleeve Ileal (SASI) Bypass for Patients with Morbid Obesity: a Multicenter Study	31734889	No comparison with RYGB				
Comparison of short- and long-term outcomes of bariatric surgery methods: A retrospective study.	36197162	SADI-S not included				
Bariatric surgery: effects on the metabolic complications of obesity.	22287091	SADI-S not included				
Single anastomosis duodenal switch (SADI-S) versus Roux-en-y gastric bypass- defining a new gold standard in metabolic surgery	-	Only protocol				
Outcomes of SADI and OAGB Compared to RYGB from the Metabolic and Bariatric Surgery Quality Improvement Program: The North American Experience	10.1007/s11695- 023-07019-x	No data for metaanalisis				
A Comparison of the Bariatric Procedures that Are Performed in the Treatment of Super Morbid Obesity.	28451928	SADI-S not included				
Trends in Utilization and Relative Complication Rates of Bariatric Procedures.	31012048	SADI-S not included				
Bariatric surgery and prevention of cardiovascular events and mortality in morbid obesity: mechanisms of action and choice of surgery.	25770762	SADI-S not included				
Morbid obesity treatment by SADI-S: a multi-center randomized controlled clinical trial	32873678	Only protocol				

Long-Term Outcomes of Bariatric and Metabolic Surgery in Japan: Results of a Multi-Institutional Survey.	27631329	SADI-S not included
[Analysis of the 1-year curative efficacy of sleeve gastrectomy, Roux-en-Y gastric bypass, single anastomosis duodenal-ileal bypass with sleeve gastrectomy and biliopancreatic diversion with duodenal switch in patients with super obesity].	37709694	Chinese language
Efficacy of Different Procedures of Metabolic Surgery for Type 2 Diabetes in Asia: a Multinational and Multicenter Exploratory Study.	33523416	SADI-S not included
Single-anastomosis Duodeno Ileal Bypass (SADI) Versus Roux-en-Y Gastric Bypass NCT03610256	-	Only protocol
Comparative Effectiveness and Safety of Bariatric Procedures for Weight Loss: A PCORnet Cohort Study.	30383139	SADI-S not included
Atherogenic Dyslipidemia Remission 1 Year After Bariatric Surgery	27988827	SADI-S not included
Comparative Effectiveness of Different Bariatric Procedures in Super Morbid Obesity.	30251091	SADI-S not included

Supplementary material v.1