Supplementary Table 1. Search strategy to identify randomized controlled trials investigating the effect of liquid meal replacements on cardiometabolic risk factors in overweight/obese individuals with type 2 diabetes

MEDLINE through December 10, 2018	EMBASE through December 10, 2018	Cochrane Central Register of Controlled Trials through December 10, 2018
1. (meal* adj3 replace*).mp.	1. (meal* adj3 replace*).mp.	1. (meal* adj3 replace*).ti,ab,hw.
2. (breakfast adj3 replace*).mp.	2. (breakfast adj3 replace*).mp.	2. (breakfast adj3 replace*).ti,ab,hw.
3. (lunch adj3 replace*).mp.	3. (lunch adj3 replace*).mp.	3. (lunch adj3 replace*).ti,ab,hw.
4. (dinner adj3 replace*).mp.	4. (dinner adj3 replace*).mp.	4. (dinner adj3 replace*).ti,ab,hw.
5. liquid supplement*.mp.	5. liquid supplement*.mp.	5. liquid supplement*.ti,ab,hw.
6. (formula adj2 diet*).mp.	6. (formula adj2 diet*).mp.	6. (formula adj2 diet*).ti,ab,hw.
7. or /1- 6	7. or/ 1-6	7. or/ 1- 6
8. ogtt.mp.	8. ogtt.mp.	8. ogtt.ti,ab,hw.
9. hba1c.mp.	9. hba1c.mp.	9. hba1c.ti,ab,hw.
10. insulin*.mp.	10. insulin*.mp.	10. insulin*.ti,ab,hw.
11. glycemia.mp.	11. glycemia.mp.	11. glycemia.ti,ab,hw.
12. hyperinsulin*.mp.	12. hyperinsulin*.mp.	12. hyperinsulin*.ti,ab,hw.
13. dysglycemia.mp.	13. dysglycemia.mp.	13. dysglycemia.ti,ab,hw.
14. exp Hemoglobin A, Glycosylated/	14. exp hemoglobin A1c/	14. exp Hemoglobin A, Glycosylated/
15. exp Blood Glucose/	15. exp glucose blood level/	15. exp Blood Glucose/
16. exp Hyperglycemia/	16. exp hyperglycemia/	16. exp Hyperglycemia/
		16. exp Hypergrycemia/ 17. or/ 8-16
17. or/ 8-16	17. or/8-16	
18. ldl.mp.	18. ldl.mp.	18. ldl.ti,ab,hw.
19. hdl.mp.	19. hdl.mp.	19. hdl.ti,ab,hw.
20. apo B.mp.	20. apo B.mp.	20. apo B.ti,ab,hw.
21. non hdl c.mp.	21. non hdl c.mp.	21. non hdl c.ti,ab,hw.
22. triglycerides.mp.	22. triglycerides.mp.	22. triglycerides.ti,ab,hw.
23. TG.mp.	23. TG.mp.	23. TG.ti,ab,hw.
24. triacylglycerol*.mp.	24. triacyglycerol*.mp.	24. triacylglycerol.ti,ab,hw.
25. TAG.mp.	25. TAG.mp.	25. TAG.ti,ab,hw.
26. hypertriglyceridemia.mp.	26. hypertriglyceridemia.mp.	26. hypertriglyceridemia.ti,ab,hw.
27. exp Cholesterol, LDL/	27. exp low density lipoprotein cholesterol/	27. exp Cholesterol, LDL/
28. exp Cholesterol, HDL/	28. exp high density lipoprotein cholesterol/	28. exp Cholesterol, HDL/
29. exp Apolipoproteins B/	29. exp apolipoprotein B/	29. exp Apolipoproteins B/
30. exp Triglycerides/	30. exp triacylglycerol/	30. exp Triglycerides/
31. exp Hypertriglyceridemia/	31. exp hypertriglyceridemia/	31. exp Hypertriglyceridemia/
32. exp Dyslpidemias/	32. exp dyslipidemia/	32. exp Dyslipidemias/
33. or/18- 32	33. or/ 18-32	33. or/ 18-32
34. systolic blood pressure.mp.	34. systolic blood pressure.mp.	34. systolic blood pressure.ti,ab,hw.
diastolic blood pressure.mp.	35. diastolic blood pressure.mp.	diastolic blood pressure.ti,ab,hw.
36. hypertension.mp.	36. hypertension.mp.	36. hypertension.ti,ab,hw.
37. SBP.mp.	37. SBP.mp.	37. SBP.ti,ab,hw.
38. DBP.mp.	38. DBP.mp.	38. DBP.ti,ab,hw.
39. exp Hypertension/	39. exp hypertension/	39. exp Hypertension/
40. exp Blood Pressure/	40. exp blood pressure/	40. exp Blood Pressure/
41. or/ 34- 40	41. or/34- 40	41. or/34- 40
42. waist circumference.mp.	42. waist circumference.mp.	42. waist circumference.ti,ab,hw.
43. body weight.mp.	43. body weight.mp.	43. body weight.ti,ab,hw.
44. body fat.mp.	44. body fat.mp.	44. body fat.ti,ab,hw.
45. body mass index.mp.	45. body mass index.mp.	45. body mass index.ti,ab,hw.
46. BMI.mp.	46. BMI.mp.	46. BMI.ti,ab,hw.
47. metabolic syndrome.mp.	47. metabolic syndrome.mp.	47. metabolic syndrome.ti,ab,hw.
48. exp Abdominal Fat/	48. exp abdominal fat/	48. exp Abdominal Fat/
49. exp Body Weight/	49. exp body weight/	49. exp Body Weight/
50. exp Body Mass Index/	50. exp body mass/	50. exp Body Mass Index/
51. or/ 42-50	51. or/ 42-50	51. or/ 42-50
52. exp Obesity/	52. exp obesity/	52. exp Obesity/
53. exp Diabetes Mellitus, Type 2/	53. exp diabetes mellitus/	53. exp Diabetes Mellitus, Type 2/
54. exp Metabolic Syndrome X/	54. exp metabolic syndrome X/	54. exp Metabolic Syndrome X/
55. or/ 52-54	54. exp metabolic syndrome <i>X</i> /	55. 52 or 53 or 54
56. 7 and (17 or 33 or 51 or 55)	56. 7 and (17 or 33 or 41 or 51 or 55)	56. 7 and (17 or 33 or 41 or 51 or 55)
57. limit 56 to animals	57. limit 56 to animals	
58. 56 not 57	58. 56 not 57	1

Original search date: September 12, 2016

Updates: August 15, 2017; January 22, 2018; March 22, 2018; May 31, 2018; December 10, 2018

Supplementary Table 2. Trial characteristics

Study, Year [Reference]	Participants	Age, years	BMI, kg/m ²	HbA _{1e} ,	Diabetes duration, years	Setting	Design	Diet Description	Diet breakdown (%C: %F: %P)	Dose (%E)	Additional treatment characteristics	Dropout Rate, %	Follow- up duration	Funding source
Yip et al., 2001						OP, USA	P						12 weeks	A & I
Intervention	41 OB + DM2	58.8 <u>+</u> 8.7	32.6 <u>+</u> 4.1	8.7 <u>+</u> 1.3	NR			2 to 3 main meals replaced with MR shakes (sugar-containing and sugar- free) + portion-controlled dinner high in fruits and vegetables	500 kcal/d deficit	~29	Individual consultation with registered dietitian at various timepoints throughout study	18		
Control	16 OB + DM2	59.2 <u>+</u> 7.7	33.8 <u>+</u> 4.8	9.3 <u>+</u> 1.5	NR			ADA-based individualized food exchange diet plan	500 kcal/d deficit (55-65: <30: 10- 20)		Individual consultation with registered dietitian at various timepoints throughout study	36		
Li et al., 2005 [20]						OP, USA	P						52 weeks	ĭ
Intervention	46 OB + DM2 (27M, 19F)	54.4 <u>+</u> 9.3	32.8 <u>+</u> 3.7	7.6 <u>+</u> 1.4	NR	OI, CDA	1	1 to 2 main meals were replaced with MR shakes + fruits and vegetables + 1 to 2 sensible meals	500 kcal/d deficit	~11- 23		19	32 weeks	
Control	36 OB + DM2 (24M, 12F)	56.6 <u>+</u> 10.4	33.7 <u>+</u> 3.6	7.5 <u>+</u> 1.7	NR			ADA-based food exchanges	500 kcal/d deficit (55-65: <30: 10- 20)			33		
Cheskin et al., 2008 [21]						OP, USA	P			~20			34 weeks	I
Intervention	54 OW/OB + DM2 (25M, 29F)	54.6 <u>+</u> 7.0	35.3 <u>+</u> 3.5	7.7 <u>+</u> 0.2	NR			50-60%E came from MR shakes, soups, and bars	25% energy deficit (45-50: 25-30: 15- 25)		Attended group educational classes on nutrition, exercise and diabetes	43		
Control	58 OW/OB + DM2 (24M. 34F)	55.5 <u>+</u> 7.2	35.7 ± 3.8	7.1 ± 0.2	NR			ADA-based food exchange lists	25% energy deficit (45-50: 25-30: 15- 25)		Attended group educational classes on nutrition, exercise and diabetes	71		
Sun et al., 2008 [22]						OP, China	P						24 weeks	I
Intervention	100 OW + DM2 (74M, 26F)	51.0 <u>+</u> 10.0	26.6 <u>+</u> 3.0	7.1 <u>+</u> 1.0	4.0 <u>+</u> 3.0	-		Replaced breakfast with MR shake	~1600 kcal/d	~13	Received blood glucose monitors and group diabetes education	3		
Control	50 OW + DM2 (34M, 16F)	51.0 <u>+</u> 7.0	27.2 <u>+</u> 2.1	7.0 <u>+</u> 1.4	4.0 <u>+</u> 2.8			ADA- and CDA-based exchange diet plan	~1600 kcal/d		Received diabetes education including diet and physical activity instruction	2		
Keogh & Clifton, 2012 [23]						OP, Australia	P						24 weeks	NR
Intervention	43 OW/OB (27M, 16F)	61.7	33.7	6.8	NR			2 main meals were replaced with MR shakes + low fat evening meal + at least 5 servings of fruit and	~1200 kcal/d	~35		28		
Control	38 OW/OB (23M, 15F)		33.7	0.0	NR			vegetables CSIRO Total Wellbeing Diet book				31		
Shirai et al., 2013 [24]						OP, Japan	P						24 weeks	A
Intervention	119 OW/OB + DM2 (45M, 74F)	50.5 <u>+</u> 11.8	30.8 <u>+</u> 5.8	7.7 <u>+</u> 1.4	NR			Breakfast was replaced with LMR + 2 conventional Japanese low-caloric meals	20 kcal/kg x standard body weight (52:30:18)	~15		1		
Control	110 OW/OB + DM2 (40M, 70F)	51.7 <u>+</u> 10.9	30.0 <u>+</u> 4.6	7.7 <u>+</u> 1.3	NR			Classical Japanese low-caloric meals 3 times per day	20 kcal/kg x standard body weight (60:25:15)			8		

Study, Year [Reference]	Participants	Age, years	BMI, kg/m ²	HbA _{1c} , %	Diabetes duration, years	Setting	Design	Diet Description	Diet breakdown (C: F: P)	Dose (%E)	Additional treatment characteristics	Dropout Rate, %	Follow- up, wks	Funding
Stenvers et al., 2014 [25]						OP, Netherlands	С						12 weeks	I
Intervention	20 OW/OB + DM2	60.0 <u>+</u>	Median (25 th -75 th	Median (25 th – 75 th percentile),	Median (25 th – 75 th			Breakfast was replaced with MR shake + self-selected conventional foods	41: 32: 33 (1659 kcal/d)	~18%		16		
Control	(10M, 10F)	7.0	percentile), 30 (27-35)	6.5 (6.1- 6.8)	percentile), 5 (1-9)			Free-choice control breakfast + self- selected conventional foods	43: 27: 30 (1737 kcal/d)			20		
Chee et al., 2017 [26]						OP, Malaysia	P						24 weeks	I
Intervention 1 (tDNA-MI)	58 OW/OB + DM2 (19M, 39F)	55.0 <u>+</u> 8.0 (median <u>+</u> IQR)	30.7 ± 8.2 (median ± IQR)	7.7 ± 1.1 (median ± IQR)	NR	·		1 to 2 main meals replaced with MR shakes + self-selected conventional low-calorie foods	1200 or 1500 kcal/d	~31-63	Received counselling incorporating motivational interviewing + prescription of 150 mins/wk of physical activity	12		
Intervention 2 (tDNA-CC)	57 OW/OB + DM2 (7M, 50F)	55.0 <u>+</u> 8.0 (median <u>+</u> IQR)	29.4 ± 7.3 (median ± IQR)	7.7 ± 1.4 (median ± IQR)	NR			1 to 2 main meals replaced with MR shakes + self-selected conventional low-calorie foods	1200 or 1500 kcal/d	~31-63	Received counselling incorporating conventional techniques (i.e. empathetic listening, encouragement) + prescription of 150 mins/wk of physical activity	30		
Control (UC)	105 OW/OB + DM2 (59M, 56F)	54.0 <u>+</u> 8.0 (median <u>+</u> IQR)	28.9 ± 6.3 (median ± IQR)	7.9 ± 1.3 (median ± IQR)	NR			Low-calorie diet of self-selected conventional foods based on the Malaysian Clinical Practice Guidelines	1200 or 1500 kcal/d		Followed Malaysian Clinical Practice Guidelines for DM2 (includes recommendation of 150 mins/wk of physical activity) with standard diabetes support and lifestyle education	15		

Date represents mean \pm SD, unless stated otherwise. tDNA, trans-cultural diabetes-specific nutrition algorithm; MI, motivational interviewing; CC, conventional counselling; UC, usual care; OW, overweight; OB, obese; DM2, type 2 diabetes; M, male; F, female; NR, not reported; OP, outpatient; P, parallel; C, crossover; MR, meal replacement; LMR, liquid meal replacement; ADA, American Diabetes Association; CDA, Chinese Diabetes Association; CSIRO, Commonwealth Scientific and Industrial Research Organization; C: F: P, carbohydrates: fat: protein; kcal/d, calories per day; %E, % of total daily caloric intake; A, agency; I, industry;

Supplementary Table 3. Select sensitivity analyses in which the systematic removal of an individual trial altered the significance of the effect estimate or the evidence for heterogeneity

Removal of	Intervention, N	Control, N	P	ooled effect estim	ate	Heter	rogeneity
			MD	95% CI	P-value	I^2	P_{Q}
Body fat, %							
Chee et al. 2017 – CC vs. UC	57	57	-1.49	[-2.16, -0.83]	< 0.001	63%	0.07
Chee et al. 2017 – MI vs. UC	58	58	-1.61	[-2.37, -0.84]	< 0.001	67%	0.05
Waist circumference, cm							
Sun et al. 2008	100	50	-1.79	[-3.57, -0.01]	0.05	69%	0.02
Chee et al. 2017 – MI vs. UC	58	58	-1.87	[-3.74, 0.00]	0.05	79%	0.002
Stenvers et al. 2014	20	20	-3.17	[-3.87, -2.46]	< 0.001	0%	0.43
Fasting insulin, pmol/L							
Li et al. 2005	46	36	-12.01	[-25.35, 1.32]	0.08	37%	0.18
Sun et al. 2008	100	50	-10.06	[-22.99, 2.86]	0.13	32%	0.21
Cheskin et al. 2008	31	17	-8.16	[-19.18, 2.87]	0.15	0%	0.43
Shirai et al. 2013	119	110	-10.21	[-24.81, 4.39]	0.17	35%	0.19
LDL-c, mmol/L							
Li et al. 2005	46	36	0.06	[-0.03, 0.15]	0.18	37%	0.14
HDL-c, mmol/L							
Sun et al. 2008	100	50	0.02	[-0.02, 0.05]	0.42	47%	0.07
Triglycerides, mmol/L							
Stenvers et al. 2014	20	20	-0.08	[-0.20, 0.04]	0.17	37%	0.13
Systolic blood pressure, mmHg							
Keogh & Clifton, 2012	41	36	-6.03	[-7.63, -4.43]	< 0.001	0%	0.61

MD, mean difference; CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Supplementary Table 4. Sensitivity analyses of pooled effect estimates in which trials of <24 weeks in duration were removed

Outcome	Pooled effect estimate of all trials	included	Pooled effect estimates after rem <24 weeks in duration		% change in pooled effect estimate
	Mean difference [95% CI]	P-value	Mean difference [95% CI]	P-value	
Body weight, kg	-2.37 [-3.30, -1.44]	< 0.001	-2.74 [-3.87, -1.62]	< 0.001	-16%
BMI, kg/m ²	-0.87 [-1.31, -0.42]	< 0.001	-1.12 [-1.68, -0.57]	< 0.001	-29%
Body fat, %	-1.66 [-2.17, -1.15]	< 0.001	-1.72 [-2.24, -1.21]	< 0.001	-4%
Waist circumference, cm	-2.24 [-3.72, -0.77]	0.003	-3.17 [-3.87, -2.46]	< 0.001	-42%
HbA _{1c} , %	-0.43 [-0.66, -0.19]	< 0.001	-0.52 [-0.78, -0.26]	< 0.001	-21%
Fasting glucose, mmol/l	-0.63 [-0.99, -0.27]	< 0.001	-0.56 [-0.94, -0.17]	0.005	+11%
Fasting insulin, pmol/l	-11.83 [-23.11, -0.54]	0.04	-19.41 [-31.13, -7.69]	0.001	-64%
LDL-c, mmol/l	0.02 [-0.10, 0.14]	0.78	0.03 [-0.12, 0.17]	0.72	-50%
HDL-c, mmol/l	0.00 [-0.05, 0.04]	0.93	-0.01 [-0.06, 0.05]	0.73	-100%
Non-HDL-c, mmol/l	-0.02 [-0.11, 0.07]	0.69	-0.01 [-0.12, 0.10]	0.83	+50%
Triglycerides, mmol/l	-0.01 [-0.17, 0.14]	0.86	-0.07 [-0.22, 0.07]	0.33	-600%
Systolic blood pressure, mmHg	-4.97 [-7.32, -2.62]	< 0.001	-5.00 [-7.53, -2.48]	< 0.001	-1%
Diastolic blood pressure, mmHg	-1.98 [-3.05, -0.91]	< 0.001	-2.09 [-3.28, -0.89]	< 0.001	-6%

Supplementary Table 5. Sensitivity analyses of heterogeneity in which trials of <24 weeks in duration were removed

Outcome	Heterogeneity of a	all included trials		noval of trials <24 weeks in
	I^2	P_{Q}	I^2	$\mathbf{P}_{\mathbf{Q}}$
Body weight, kg	84%	< 0.001	87%	< 0.001
BMI, kg/m ²	89%	< 0.001	91%	< 0.001
Body fat, %	50%	0.11	23%	0.27
Waist circumference, cm	74%	0.004	0%	0.43
HbA _{1c} , %	87%	< 0.001	88%	< 0.001
Fasting glucose, mmol/l	70%	< 0.001	64%	0.01
Fasting insulin, pmol/l	22%	0.27	0%	0.74
LDL-c, mmol/l	68%	0.001	75%	< 0.001
HDL-c, mmol/l	71%	< 0.001	78%	< 0.001
Non-HDL-c, mmol/l	29%	0.19	46%	0.08
Triglycerides, mmol/l	68%	0.002	46%	0.09
Systolic blood pressure, mmHg	53%	0.05	61%	0.03
Diastolic blood pressure, mmHg	15%	0.32	27%	0.24

Supplementary Table 6. Sensitivity analyses of pooled effect estimates in which trials using non-diabetes-specific liquid meal replacements were removed

Outcome	Pooled effect estimate of all trials	included	Pooled effect estimates after rem using non-diabetes-specific lid replacements	0	% change in pooled effect estimate
	Mean difference [95% CI]	P-value	Mean difference [95% CI]	P-value	
Body weight, kg	-2.37 [-3.30, -1.44]	< 0.001	-2.97 [-4.88, -1.05]	0.002	-25%
BMI, kg/m ²	-0.87 [-1.31, -0.42]	< 0.001	-1.10 [-1.90, -0.30]	0.007	-26%
Body fat, %	-1.66 [-2.17, -1.15]	< 0.001	NA	NA	NA
Waist circumference, cm	-2.24 [-3.72, -0.77]	0.003	NA	NA	NA
HbA _{1c} , %	-0.43 [-0.66, -0.19]	< 0.001	-0.53 [-0.92, -0.14]	0.007	-23%
Fasting glucose, mmol/l	-0.63 [-0.99, -0.27]	< 0.001	-0.76 [-1.15, -0.37]	< 0.001	-21%
Fasting insulin, pmol/l	-11.83 [-23.11, -0.54]	0.04	-14.82 [-37.48, 7.83]	0.20	-25%
LDL-c, mmol/l	0.02 [-0.10, 0.14]	0.78	0.07 [-0.06, 0.20]	0.28	+250%
HDL-c, mmol/l	0.00 [-0.05, 0.04]	0.93	-0.04 [-0.08, 0.00]	0.06	-400%
Non-HDL-c, mmol/l	-0.02 [-0.11, 0.07]	0.69	0.05 [-0.05, 0.16]	0.33	+350%
Triglycerides, mmol/l	-0.01 [-0.17, 0.14]	0.86	0.05 [-0.20, 0.31]	0.68	+600%
Systolic blood pressure, mmHg	-4.97 [-7.32, -2.62]	< 0.001	-6.57 [-8.49, -4.65]	< 0.001	-32%
Diastolic blood pressure, mmHg	-1.98 [-3.05, -0.91]	< 0.001	-2.60 [-3.85, -1.35]	< 0.001	-31%

Supplementary Table 7. Sensitivity analyses of heterogeneity in which trials using non-diabetes-specific liquid meal replacements were removed

Outcome	Heterogeneity of a	all included trials		emoval of trials using non- quid meal replacements
Outcome	I^2	$\mathbf{P}_{\mathbf{Q}}$	I^2	P_{Q}
Body weight, kg	84%	< 0.001	91%	< 0.001
BMI, kg/m ²	89%	< 0.001	93%	< 0.001
Body fat, %	50%	0.11	NA	NA
Waist circumference, cm	74%	0.004	NA	NA
HbA _{1c} , %	87%	< 0.001	91%	<0.001
Fasting glucose, mmol/l	70%	< 0.001	51%	0.09
Fasting insulin, pmol/l	22%	0.27	54%	0.11
LDL-c, mmol/l	68%	0.001	56%	0.06
HDL-c, mmol/l	71%	< 0.001	37%	0.18
Non-HDL-c, mmol/l	29%	0.19	0%	0.92
Triglycerides, mmol/l	68%	0.002	72%	0.006
Systolic blood pressure, mmHg	53%	0.05	0%	0.62
Diastolic blood pressure, mmHg	15%	0.32	3%	0.39

Supplementary Table 8. GRADE certainty of evidence assessment

				Certainty assess	sment*			Effect	Certainty
Outcome	№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations**	MD [95% CI]***	
Body weight, kg	9	randomised trials	not serious	serious ^a	not serious	not serious	none	-2.37 [-3.30, -1.44]	
									⊕⊕⊕ ○ MODERATE
BMI, kg/m ²	8	randomised trials	not serious	serious b	not serious	not serious	none	-0.87 [-1.31, -0.42]	
									⊕⊕⊕ ○ MODERATE
Body fat, %	4	randomised trials	not serious	not serious	not serious	serious ^c	none	-1.66 [-2.17, -1.15]	
									⊕⊕⊕○ MODERATE
WC, cm	5	randomised trials	not serious	serious d	not serious	serious ^e	none	-2.24 [-3.72, -0.77]	
									⊕⊕○○ LOW
HbA _{1c} , %	9	randomised trials	not serious	serious ^f	not serious	serious ^g	none	-0.43 [-0.66, -0.19]	
									⊕⊕○○ LOW
FG, mmol/l	9	randomised trials	not serious	serious h	not serious	<u>serious ⁱ</u>	none	-0.63 [-0.99, -0.27]	
									⊕⊕○○ LOW
FI, pmol/l	9	randomised trials	not serious	not serious	not serious	serious ^j	none	-11.83 [-23.11, -0.54]	
									⊕⊕⊕○ MODERATE
LDL-c, mmol/l	9	randomised trials	not serious	<u>serious ^k</u>	not serious	serious 1	none	0.02 [-0.10, 0.14]	
									⊕⊕○○ LOW

				Certainty assess	sment*			Effect	Certainty
Outcome	№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations**	MD [95% CI]***	
HDL-c, mmol/l	9	randomised trials	not serious	serious ^m	not serious	serious ⁿ	none	0.00 [-0.05, 0.04]	
									⊕⊕⊖⊝ LOW
Non-HDL-c, mmol/l	9	randomised trials	not serious	not serious	not serious	serious °	none	-0.02 [-0.11, 0.07]	
									⊕⊕⊕○ MODERATE
TG, mmol/l	9	randomised trials	not serious	serious ^p	not serious	serious ^q	none	-0.01 [-0.17, 0.14]	
									⊕⊕○○ LOW
SBP, mmHg	7	randomised trials	not serious	serious ^r	not serious	not serious	none	-4.97 [-7.32, -2.62]	
									⊕⊕⊕○ MODERATE
DBP, mmHg	7	randomised trials	not serious	not serious	not serious	serious ^s	none	-1.98 [-3.05, -0.91]	
									⊕⊕⊕○ MODERATE

BMI, body mass index; WC, waist circumference; FG, fasting glucose; FI, fasting insulin; TG, triglycerides; SBP, systolic blood pressure; DBP, diastolic blood pressure; MD, mean difference

^{*}Since all included studies were randomized controlled trials, the certainty of the evidence was graded as high for all outcomes by default and then downgraded based on pre-specified criteria. Risk of bias – downgraded if the majority of studies were considered to be at high risk of bias. Inconsistency – downgraded if there was substantial unexplained heterogeneity ($I^2>50\%$, $P_Q<0.1$) that was unexplained by any *apriori* sensitivity or subgroup analyses. Indirectness – downgraded if there were factors present relating to the participants, interventions, or outcomes that limited the generalizability of the results. Imprecision – downgraded if the 95% confidence interval (95% CI) crossed the minimally important difference (MID) for benefit or harm. MIDs used for each outcome were: 0.5 kg for body weight, 0.2 kg/m² for BMI, 2% for body fat, 2 cm for waist circumference, 0.3% for HbA_{1c}, 0.5 mmol/l for fasting glucose, 5 pmol/l for fasting insulin, 0.1 mmol/l for all blood lipids and 2 mmHg for systolic and diastolic blood pressure.

^{**}Not able to assess publication bias for any of the outcomes as <10 trials were available

^{***}Random-effects model was used to pool data for body weight, BMI, waist circumference, HbA_{1c}, fasting glucose, fasting insulin, LDL-c, HDL-c, non-HDL-c, TG, SBP and DBP. Fixed-effects model was used to pool data for body fat.

^a Serious inconsistency for the effect of liquid meal replacements on body weight, as I²=84%, P_O<0.001

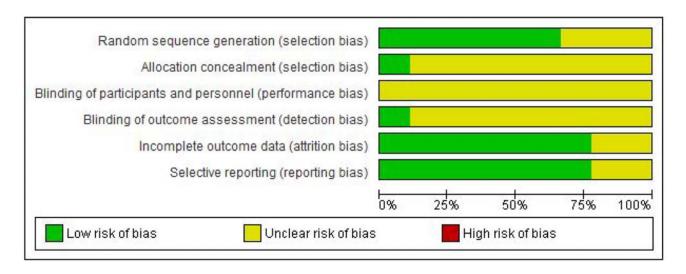
^b Serious inconsistency for the effect of liquid meal replacements on BMI, as I²=89%, P_Q<0.001

- ^c Serious imprecision for the effect of liquid meal replacements on body fat, as the 95% CIs (-2.17% to -1.15%) overlap the minimally important difference for clinical benefit (2%)
- ^d Serious inconsistency for the effect of liquid meal replacements on waist circumference, as I²=74%, P₀=0.004
- ^e Serious imprecision for the effect of liquid meal replacements on waist circumference, as the 95% CIs (-3.72 cm to -0.77 cm) overlap the minimally important difference for clinical benefit (2 cm)
- f Serious inconsistency for the effect of liquid meal replacements on HbA_{1c}, as I²=87%, P_O<0.001
- ^g Serious imprecision for the effect of liquid meal replacements on HbA_{1c} , as the 95% CIs (-0.66% to -0.19%) overlap the minimally important difference for clinical benefit (0.3%)
- ^h Serious inconsistency for the effect of liquid meal replacements on fasting glucose, as I²=70%, P_Q<0.001
- ¹ Serious imprecision for the effect of liquid meal replacements on fasting glucose, as the 95% CIs (-0.99 mmol/l to -0.27 mmol/l) overlap the minimally important difference for clinical benefit (0.5 mmol/l)
- ^j Serious imprecision for the effect of liquid meal replacements on fasting insulin, as the 95% CIs (-23.11 pmol/l to -0.54 pmol/l) overlap the minimally important difference for clinical benefit (5 pmol/l)
- ^k Serious inconsistency for the effect of liquid meal replacements on LDL-c, as I²=68%, P_Q=0.001
- ¹ Serious imprecision for the effect of liquid meal replacements on LDL-c, as the 95% CIs (-0.10 mmol/l to 0.14 mmol/l) overlap the minimally important difference for clinical benefit (0.1 mmol/l)
- ^m Serious inconsistency for the effect of liquid meal replacements on HDL-c, as I²=71%, P_Q<0.001
- ⁿ Serious imprecision for the effect of liquid meal replacements on HDL-c, as the 95% CIs (-0.05 mmol/l to 0.04 mmol/l) fall below the minimally important difference for clinical benefit (0.1 mmol/l)
- ^o Serious imprecision for the effect of liquid meal replacements on non-HDL-c, as the 95% CIs (-0.11 mmol/l to 0.07 mmol/l) overlap the minimally important difference for clinical benefit (0.1 mmol/l)
- ^p Serious inconsistency for the effect of liquid meal replacements on triglycerides, I²=68%, P=0.002
- ^q Serious imprecision for the effect of liquid meal replacements on triglycerides, as the 95% CIs (-0.17 mmol/l to 0.14 mmol/l) overlap the minimally important difference for clinical benefit (0.1 mmol/l)
- ^r Serious inconsistency for the effect of liquid meal replacements on systolic blood pressure, I²=53%, P=0.05
- ^s Serious imprecision for the effect of liquid meal replacements on diastolic blood pressure, as the 95% CIs (-3.05 mmHg to -0.91 mmHg) overlap the minimally important difference for clinical benefit (2 mmHg)

Supplemental Figure 1. Cochrane risk of bias summary for all included trials

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)
Chee et al. 2017 - CC vs. UC	•	?	?	?	•	?
Chee et al. 2017 - MI vs. UC	•	?	?	?	•	?
Cheskin et al. 2008	•	?	?	?	•	•
Keogh & Clifton, 2012	•	?	?	•	•	•
Li et al. 2005	•	?	?	?	•	•
Shirai et al. 2013	?	?	?	?	?	•
Stenvers et al. 2014	?	•	?	?	•	•
Sun et al. 2008	?	?	?	?	•	•
Yip et al. 2001	•	?	?	?	?	•

Supplemental Figure 2. Risk of bias proportion for all included trials



Supplementary Figure 3. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on body weight. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in body weight, kg
Yip et al. [19]	2001	41	16	10.0%	-1.90 [-3.57, -0.23]	
Li et al. [20]	2005	46	36	10.4%	-1.99 [-3.56, -0.42]	
Sun et al. [22]	2008	100	50	14.3%	-0.90 [-1.37, -0.43]	-
Cheskin et al. [21]	2008	31	17	8.9%	-3.60 [-5.58, -1.62]	
Keogh & Clifton [23]	2012	60	55	12.1%	-1.60 [-2.74, -0.46]	
Shirai et al. [24]	2013	119	110	13.7%	-2.10 [-2.79, -1.41]	-
Stenvers et al. [25]	2014	20	20	12.0%	-0.50 [-1.68, 0.68]	-
Chee et al CC vs. UC [26]	2017	57	57	9.5%	-4.50 [-6.30, -2.70]	
Chee et al MI vs. UC [26]	2017	58	58	9.0%	-6.10 [-8.04, -4.16]	-
Total					-2.37 [-3.30, -1.44]	•
Heterogeneity: Tau² = 1.52; Chi²	= 48.79, df	= 8 (P < 0.00001);	l ² = 84%			
Test for overall effect: Z = 4.99 (F	< 0.00001)				-10 -5 0 5 10
· · · · · · · · · · · · · · · · · · ·						Favours Favours intervention comparator

Supplementary Figure 4. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on BMI. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_Q <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in BMI,	kg/m²
Yip et al. [19]	2001	41	16	11.5%	-0.20 [-0.89, 0.49]	-+	
Li et al. [20]	2005	46	36	13.1%	-0.67 [-1.18, -0.16]	-	
Cheskin et al. [21]	2008	31	17	6.9%	-1.20 [-2.47, 0.07]	•	
Sun et al. [22]	2008	100	50	15.3%	-0.30 [-0.50, -0.10]	-	
Shirai et al. [24]	2013	119	110	15.0%	-0.80 [-1.05, -0.55]	-	
Stenvers et al. [25]	2014	20	20	14.1%	-0.10 [-0.49, 0.29]	-	
Chee et al CC vs. UC [26]	2017	57	57	12.0%	-1.90 [-2.53, -1.27]	-	
Chee et al MI vs. UC [26]	2017	58	58	12.0%	-2.20 [-2.83, -1.57]	-	
Total					-0.87 [-1.31, -0.42]	•	
Heterogeneity: Tau ² = 0.33; Chi ²	= 61.31, df =	7 (P < 0.00001); I ²	= 89%			1 1 1	
Test for overall effect: Z = 3.81 (F	P = 0.0001					-4 -2 0 2	4
						Favours Favours intervention comparate	or

Supplementary Figure 5. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on body fat. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with fixed-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_Q <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		1	Mean difference [95%	Cl] in body fat, %	
Cheskin et al. [21]	2008	31	17	2.2%	1.00 [-2.43, 4.43]		-		
Stenvers et al. [25]	2014	20	20	1.7%	2.00 [-1.92, 5.92]		20	-	
Chee et al CC vs. UC [26]	2017	57	57	40.5%	-1.90 [-2.70, -1.10]				
Chee et al MI vs. UC [26]	2017	58	58	55.6%	-1.70 [-2.39, -1.01]		•		
Total					-1.66 [-2.17, -1. <mark>1</mark> 5]		•		
Heterogeneity: Chi ² = 6.01, df =	3 (P = 0.11)	; I ² = 50%				10	<u> </u>	<u> </u>	10
Test for overall effect: Z = 6.35 (P < 0.00001	1)				-10	-5 0	5	10
							Favours intervention	Favours comparator	

Supplementary Figure 6. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on waist circumference. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of $P_0 < 0.10$ and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in waist circumference, cr
Sun et al. [22]	2008	100	50	26.4%	-3.50 [-4.42, -2.58]	+
Cheskin et al. [21]	2008	31	17	9.5%	-1.60 [-5.54, 2.34]	
Stenvers et al. [25]	2014	20	20	20.7%	0.30 [-1.46, 2.06]	-
Chee et al MI vs. UC [26]	2017	58	58	21.2%	-3.50 [-5.19, -1.81]	-
Chee et al CC vs. UC [26]	2017	57	57	22.2%	-2.20 [-3.75, -0.65]	-
Total					-2.24 [-3.72, -0.77]	•
Heterogeneity: Tau ² = 1.93; Chi ²	= 15.57, d	f = 4 (P = 0.004); I ²	= 74%			-10 -5 0 5 10
Test for overall effect: Z = 2.98 (P = 0.003					
						Favours Favours intervention comparator

Supplementary Figure 7. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on HbA_{1c} . Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in HbA1c, %
Yip et al. [19]	2001	41	16	8.3%	-0.20 [-0.73, 0.33]	-+-
Li et al. [20]	2005	46	36	9.6%	-0.49 [-0.92, -0.06]	
Sun et al. [22]	2008	100	50	11.8%	-0.90 [-1.17, -0.63]	
Cheskin et al. [21]	2008	31	17	6.5%	-0.60 [-1.29, 0.09]	
Keogh & Clifton [23]	2012	60	55	13.0%	-0.10 [-0.28, 0.08]	-
Shirai et al. [24]	2013	119	110	13.0%	-0.40 [-0.58, -0.22]	-
Stenvers et al. [25]	2014	20	20	12.3%	0.00 [-0.24, 0.24]	
Chee et al CC vs. UC [26]	2017	57	57	12.8%	-0.30 [-0.50, -0.10]	-
Chee et al MI vs. UC [26]	2017	58	58	12.8%	-0.90 [-1.10, -0.70]	-
Total					-0.43 [-0.66, -0.19]	•
Heterogeneity: Tau ² = 0.11; Chi ² =	= 62.02, df =	8 (P < 0.00001); I ²	= 87%			1 1
Test for overall effect: Z = 3.52 (P	= 0.0004)					-2 -1 0 1
						Favours Favours intervention comparator

Supplementary Figure 8. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on fasting glucose. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

tudy [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in fasting glucose, mmo
ip et al. [19]	2001	41	16	8.6%	-1.81 [-2.67, -0.95]	
i et al. [20]	2005	46	36	10.1%	-0.23 [-0.96, 0.50]	
un et al. [22]	2008	100	50	10.7%	-1.10 [-1.77, -0.43]	
heskin et al. [21]	2008	31	17	6.5%	-0.62 [-1.74, 0.50]	
eogh & Clifton [23]	2012	40	35	12.4%	0.21 [-0.32, 0.74]	+
hirai et al. [24]	2013	119	110	14.1%	-0.38 [-0.77, 0.01]	-
tenvers et al. [25]	2014	20	20	14.1%	-0.30 [-0.69, 0.09]	-+-
hee et al MI vs. UC [26]	2017	58	58	11.7%	-1.20 [-1.79, -0.61]	-
thee et al CC vs. UC [26]	2017	57	57	11.7%	-0.70 [-1.29, -0.11]	-
otal					-0.63 [-0.99, -0.27]	•
leterogeneity: Tau² = 0.20; Chi² =	= 26.66, df =	8 (P = 0.0008); I ²	= 70%			1 1 1
est for overall effect: Z = 3.42 (P	= 0.0006)					-4 -2 0 2 4

Supplementary Figure 9. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on fasting insulin. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 .

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in f	asting insulin, pmol
Yip et al. [19]	2001	41	16	18.3%	2.00 [-21.07, 25.07]	_ <u>+</u>	_
Li et al. [20]	2005	46	36	11.7%	-8.61 [-39.05, 21.83]		- 0
Sun et al. [22]	2008	100	50	12.7%	-22.22 [-51.13, 6.69]		
Cheskin et al. [21]	2008	31	17	19.8%	-28.19 [-50.06, -6.32]		
Shirai et al. [24]	2013	119	110	25.1%	-15.97 [-34.49, 2.55]	-	
Stenvers et al. [25]	2014	20	20	12.4%	10.00 [-19.40, 39.40]	-	
Total					-11.83 [-23.11, -0.54]	•	
Heterogeneity: Tau ² = 42.8	32; Chi² = 6.37	, df = 5 (P = 0.27); I	2 = 22%			-100 -50 0	50 100
Test for overall effect: Z = 3	2.05 (P = 0.04))				Favours intervention	Favours comparator

Supplementary Figure 10. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on LDL-c. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_Q <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in LDL-c, mmo
Yip et al. [19]	2001	41	16	6.9%	0.06 [-0.29, 0.41]	
Li et al. [20]	2005	46	36	11.1%	-0.38 [-0.60, -0.16]	
Cheskin et al. [21]	2008	31	17	9.0%	0.30 [0.03, 0.57]	
Sun et al. [22]	2008	100	50	11.8%	-0.10 [-0.30, 0.10]	
Keogh & Clifton [23]	2012	40	35	8.4%	0.17 [-0.12, 0.46]	-
Shirai et al. [24]	2013	119	110	14.9%	-0.01 [-0.13, 0.11]	-
Stenvers et al. [25]	2014	20	20	11.1%	-0.07 [-0.29, 0.15]	
Chee et al MI vs. UC [26]	2017	58	58	13.4%	0.18 [0.02, 0.34]	
Chee et al CC vs. UC [26]	2017	57	57	13.4%	0.08 [-0.08, 0.24]	+
Total					0.02 [-0.10, 0.14]	•
Heterogeneity: Tau ² = 0.02; Chi ²	= 25.18, df =	8 (P = 0.001); I ² = 68	3%			1 1 1
Test for overall effect: Z = 0.28 (P	0 = 0.78					-1 -0.5 0 0.5 1
						Favours Favours intervention comparator

Supplementary Figure 11. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on HDL-c. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95%	CI] in HDL-c, mmol/
Yip et al. [19]	2001	41	16	9.3%	0.06 [-0.04, 0.16]	+	_
Li et al. [20]	2005	46	36	11.0%	0.08 [0.00, 0.16]	-	•
Sun et al. [22]	2008	100	50	12.9%	-0.10 [-0.16, -0.04]	-	
Cheskin et al. [21]	2008	31	17	7.8%	-0.01 [-0.13, 0.11]	-	
Keogh & Clifton [23]	2012	40	35	9.3%	-0.05 [-0.15, 0.05]		-
Shirai et al. [24]	2013	119	110	14.8%	0.06 [0.02, 0.10]	-	•
Stenvers et al. [25]	2014	20	20	11.0%	0.00 [-0.08, 0.08]	-	_
Chee et al CC vs. UC [26]	2017	57	57	11.0%	-0.05 [-0.13, 0.03]	-	
Chee et al MI vs. UC [26]	2017	58	58	12.9%	-0.01 [-0.07, 0.05]	-	-
Total					0.00 [-0.05, 0.04]	•	
Heterogeneity: Tau² = 0.00; Chi² = 2	27.96, df = 8 (F	P = 0.0005); I ² = 71	%			-0.5 -0.25 0	0.25 0.5
Test for overall effect: Z = 0.08 (P =	0.93)						
						Favours intervention	Favours comparator

Supplementary Figure 12. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on non-HDL-c. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in Non-HDL-c, mmol
Yip et al. [19]	2001	41	16	6.0%	-0.05 [-0.40, 0.30]	
Li et al. [20]	2005	46	36	9.0%	-0.33 [-0.60, -0.06]	
Sun et al. [22]	2008	100	50	14.6%	0.00 [-0.20, 0.20]	
Cheskin et al. [21]	2008	31	17	6.6%	0.16 [-0.17, 0.49]	
Keogh & Clifton [23]	2012	40	35	6.6%	0.18 [-0.15, 0.51]	
Shirai et al. [24]	2013	119	110	24.9%	-0.11 [-0.23, 0.01]	-
Stenvers et al. [25]	2014	20	20	5.0%	-0.02 [-0.41, 0.37]	
Chee et al MI vs. UC [26]	2017	58	58	14.6%	0.09 [-0.11, 0.29]	-
Chee et al CC vs. UC [26]	2017	57	57	12.9%	0.05 [-0.17, 0.27]	
Total					-0.02 [-0.11, 0.07]	•
Heterogeneity: Tau ² = 0.01; Chi ² = 11	1.21, df = 8 (P =	0.19); I ² = 29%				
Test for overall effect: Z = 0.40 (P = 0	0.69)					-1 -0.5 0 0.5 1
and an analysis of the second						Favours Favours intervention comparator

Supplementary Figure 13. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on triglycerides. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_0 <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in triglycerides, mmol
Yip et al. [19]	2001	41	16	13.2%	-0.11 [-0.35, 0.13]	-+
Li et al. [20]	2005	46	36	6.9%	0.01 [-0.46, 0.48]	
Sun et al. [22]	2008	100	50	3.5%	0.70 [-0.04, 1.44]	
Cheskin et al. [21]	2008	31	17	4.8%	-0.37 [-0.98, 0.24]	
Keogh & Clifton [23]	2012	40	35	13.2%	0.09 [-0.15, 0.33]	-
Shirai et al. [24]	2013	119	110	15.9%	-0.24 [-0.40, -0.08]	+
Stenvers et al. [25]	2014	20	20	14.6%	0.30 [0.10, 0.50]	-
Chee et al CC vs. UC [26]	2017	57	57	12.6%	-0.11 [-0.36, 0.14]	-
Chee et al MI vs. UC [26]	2017	58	58	15.3%	-0.07 [-0.25, 0.11]	+
Total					-0.01 [-0.17, 0.14]	•
Heterogeneity: Tau ² = 0.03; Chi ² =	24.69, df = 8	$(P = 0.002); I^2 = 68$	3%			
Test for overall effect: Z = 0.18 (P =	= 0.86)					-2 -1 0 1 2
	er errorevor≇.					Favours Favours intervention comparator

Supplementary Figure 14. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on systolic blood pressure. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_Q <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in sys	stolic blood pressure, mmH
Sun et al. [22]	2008	100	50	19.80%	-5.80 [-8.80, -2.80]	-	
Cheskin et al. [21]	2008	31	17	7.90%	-2.80 [-9.91, 4.31]		
Keogh & Clifton [23]	2012	41	36	14.90%	1.00 [-3.27, 5.27]		_
Shirai et al. [24]	2013	119	100	20.30%	-4.80 [-7.70, -1.90]	-	
Stenvers et al. [25]	2014	20	20	4.80%	-4.00 [-13.80, 5.80]	-	
Chee et al CC vs. UC [26]	2017	57	57	16.10%	-8.00 [-11.92, -4.08]		
Chee et al MI vs. UC [26]	2017	58	58	16.10%	-8.00 [-11.92, -4.08]		
Total					-4.97 [-7.32, -2.62]	•	
Heterogeneity: Tau ² = 4.88; Ch	i² = 12.73	3, df = 6 (P = 0.05)	; I ² = 53%			-20 -10 0	10 20
Test for overall effect: Z = 4.15	(P < 0.00)	001)				-20 -10 0	10 20
						Favours intervention	Favours comparator

Supplementary Figure 15. Forest plot of the effect of liquid meal replacements as part of a weight loss diet (intervention) compared with traditional low-calorie weight loss diets (comparator) on diastolic blood pressure. Pooled effect estimates for the overall effect is represented by the diamond. Data are expressed as mean differences (MDs) with 95% confidence intervals (CIs), using the generic inverse variance method with random-effects models. Paired analyses were applied to all crossover trials. Interstudy heterogeneity was tested by the Cochran Q-statistic at a significance level of P_Q <0.10 and quantified by I^2 . CC, conventional counselling; MI, motivational interviewing; UC, usual care.

Study [reference]	Year	Intervention, N	Control, N	Weight		Mean difference [95% CI] in diastolic blood pressure, mmHg
Sun et al. [22]	2008	100	50	15.3%	-3.30 [-5.81, -0.79]	
Cheskin et al. [21]	2008	31	17	8.4%	-1.30 [-4.83, 2.23]	
Keogh & Clifton [23]	2012	41	36	11.3%	-1.00 [-4.00, 2.00]	
Shirai et al. [24]	2013	119	110	24.6%	-0.80 [-2.66, 1.06]	-
Stenvers et al. [25]	2014	20	20	6.9%	-1.00 [-4.92, 2.92]	
Chee et al CC vs. UC [26]	2017	57	57	10.6%	-5.00 [-8.10, -1.90]	
Chee et al MI vs. UC [26]	2017	58	58	22.8%	-2.00 [-3.96, -0.04]	-
Total					-1.98 [-3.05, -0.91]	◆
Heterogeneity: Tau² = 0.31; Ch	$i^2 = 7.05$,	df = 6 (P = 0.32); I ²	= 15%			10 5 0 5 10
Test for overall effect: Z = 3.62	(P = 0.000)	03)				-10 -5 0 5 10
						Favours Favours intervention comparator