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APPENDICES ONLY

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Systematic review of the long-term effects and economic consequences of treatments for obesity and implications for health improvement

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Appendix 1

Protocol for systematic review of RCTs

Objectives

- To review systematically treatments for the prevention and management of obesity in adults
- to examine the effect of interventions compared with no intervention
- to examine the effect of adding extra interventions, such as behaviour therapy, drugs or exercise
- to evaluate treatments from the perspective of the UK NHS.

Criteria for considering studies for this review

Types of studies

Information will be sought from RCTs of at least 1 year's duration, where the control group receives a placebo or no intervention. Comparisons between different interventions will also be examined. Only interventions that are specifically designed to produce weight loss and/or prevent weight gain will be examined. Interventions where weight loss is produced coincidentally as a result of dietary changes made, for example higher fruit and vegetable consumption to lower blood pressure, will not be examined. Trials where weight loss is the desired outcome and/or the intervention, for example to reduce a risk factor for CHD, will be examined.

Types of participants

Interventions in adults from the age of 18 years upwards will be examined. There will be no upper age limit. The following information will be recorded:

- gender of participants
- smoking status
- age
- social class
- ethnic group
- whether intervention had been specifically targeted at people with the following conditions
  - diabetes
  - hypertension
  - hyperlipidaemia
  - binge eating

  according to the definitions used by the investigators
- BMI [weight in kg/(height in m)^2], weight and height
- waist circumference.

The following will be excluded:

- studies on people with bulimia nervosa
- studies on women who are pregnant
- studies in which the average BMI is $< 28\,kg/m^2$ for all groups combined.

Types of interventions

The following interventions, lasting for any period, will be examined provided there are follow-up data provided at least 1 year after the interventions started:

- drugs, including
  - pancreatic lipase inhibitor: orlistat (Xenical)*
  - SSRIs, e.g. fluoxetine (Prozac)*
  - fibre-containing bulking agents, e.g. methylcellulose (Celevac), bran (Trifyba), isphagula husk (Fybogel, Konsyl, Isogel, Regulan), sterculia
  - cholecystokinin receptor antagonists
  - centrally active appetite suppressants, e.g. sibutramine* (Reductil, Meridia), dexfenfluramine, fenfluramine, diethylpropion, phentermine, mazindol, phenylpropanolamine
  - leptin*
  - thyroid hormones
  - α-glucosidase inhibitor: acarbose (Glucobay)
  - biguanides, metformin (Glucophage)*
  - topiramate (Topomax)
  - catecholaminergic appetite suppressants, e.g. H_2 receptor antagonists, e.g. cimetidine (Tagamet)
  - cholestyramine, diethyl aminoethyl dextran
  - ephedrine*
  - caffeine*
  - atypical β-adrenergic agonists
  - growth hormone*

- physical activity
  - endurance exercise
  - resistance training
- behavioural interventions
  - cognitive behavioural therapy
  - others, e.g. motivational interviewing
- obesity surgery
  - liposuction
  - intragastric balloon
  - jaw-wiring
  - producing malabsorption e.g. jejunoileal bypass
  - gastric restriction only, e.g. vertical stapled gastroplasty with banded outlet, gastric banding, Roux-en-Y gastrojejunostomy*
  - apronectomy.

  *If no data are available from RCTs for these key interventions, information will be sought from the following categories of studies (data in descending order of importance):

  - quasi-randomised study (at least 1 year of follow-up)
  - intervention study with concurrent control group (at least 1 year of follow-up)
  - intervention study with historical control group (at least 5 years of follow-up)
  - intervention study with no control group (at least 5 years of follow-up)

- complementary medicine including
  - hypnosis
  - acupuncture
  - herbal remedies
  - homeopathy
  - reflexology
  - aromatherapy
  - vibration therapy
- diets
  - healthy eating
  - 600 kcal/day deficit or low fat
  - low calorie (1000–1600 kcal/day)
  - very low calorie (<1000 kcal/day)
  - protein sparing (≤ 40 g of carbohydrate/day)
  - low carbohydrate, high monounsaturated fat
  - salt restriction (where compared with weight loss).

Combinations of different therapies, for example weight loss versus sodium restriction, will also be examined.

Types of outcome measures

Data on the following outcome measures will be extracted:

- mortality
  - all cause
  - CHD
  - CVD
  - cancer (all cause), breast cancer, colorectal cancer
- morbidity
  - CHD
  - CVD
  - diabetes mellitus
  - cancer (all cause), breast cancer, colorectal cancer
  - musculoskeletal (all causes)
  - psychological (all causes)
  - days off work
  - GP consultations
- participant satisfaction and quality of life
- economic outcomes
- weight loss, however measured at the start and at each time interval, e.g.
  - body weight (kg)
  - weight change (kg)
  - Percentage weight change:
    - ≤ 5% of starting weight
    - 6–10% of starting weight
    - 11–20% of starting weight
    - >20% of starting weight
  - BMI (kg/m^2)
  - change in BMI
  - percentage change in BMI
  - waist circumference
  - change in waist circumference
  - percentage change in waist circumference
- blood lipids (noting whether fasted or not)
  - total cholesterol
  - LDL cholesterol
  - HDL cholesterol
  - triglycerides
- SBP and DBP
- blood glucose control
  - HbA_{1c}
  - fasting plasma glucose
- psychological health ratings
  - Nottingham Health Profile
  - Hospital Anxiety and Depression Score
- number of dropouts at each period
- times of follow-up in the study
- compliance with treatment
- adverse events.

Search strategy for identification of studies

Electronic database searching

An electronic database search will be undertaken using:

- MEDLINE
- EMBASE
- BIOSIS
- Commonwealth Agricultural Bureau Nutrition Abstracts and Reviews
- Cochrane Controlled Trials Register, including Database of Abstracts of Reviews of Effectiveness (DARE) (CRD database of systematic reviews)
- PsycINFO
- Web of Science
- UK National Research Register
- CINAHL
- HealthSTAR
- AMED
- SPORTDiscus
- British Library Inside.

Handsearching

The following journals, including conference abstracts, will be handsearched:

- *International Journal of Obesity*, Volume 1 1977 to Volume 25 (Suppl 1) 2001
- *Obesity Research*
- *Obesity Surgery*, Volume 1 (1–4) 1991 to Volume 7 (1–6) 1997
- *American Journal of Clinical Nutrition*, Volume 18(5–6) 1966 to Volume 73(2S) 2001
- *Proceedings of the Nutrition Society*, Volume 19 1960 to Volume 59 (Oral Communications Booklet) 2000
- *Journal of Human Nutrition and Dietetics*, Volume 1 1988 to Volume 14(1) 2001
- *Journal of the American Dietetic Association*, Volume 77 1980 to Volume 90 1990

Data from abstracts will be used only if the authors are able to provide full details of the study.

Further searching

- The reference lists of previous trials and review articles will be searched.
- Books and reports covering the topic of obesity will be searched.
- Trials will be sought by communicating with experts in the field and trialists.
- Biomedical companies will be contacted for details of any other relevant RCTs, published or unpublished.
- No language restriction will be applied to eligible reports.
- Searching for references will finish at the end of April 2001. However, the following journals will be handsearched from January to the end of June 2001:
  - *International Journal of Obesity*
  - *Obesity Research*
  - *Obesity Surgery*
  - *American Journal of Clinical Nutrition*
  - *Proceedings of the Nutrition Society*
  - *Journal of Human Nutrition and Dietetics*
  - *Journal of Consulting and Clinical Psychology*
  - *Lancet*
  - *British Medical Journal*
  - *Journal of the American Medical Association*
  - *Annals of Internal Medicine*
  - *New England Journal of Medicine*
  - *Archives of Internal Medicine*.

Methods of the review

Identification of possible RCTs

All possible RCTs will be entered into Reference Manager version 9. Subject keywords and source of the article will be added.

Register of RCTs

A sample of all abstracts and study titles will be independently read by two researchers to assess subject relevance. Researchers will discuss all studies which either researcher has difficulty in assessing. RCTs relevant to the review will be assigned specific keywords on Reference Manager and the full published paper obtained or authors contacted for the full report.

Quality assessment of studies

Full copies of the first 20 studies will be independently assessed by two researchers using a standard form for quality assessment. Differences of opinion will be resolved by discussion. Thereafter, if appropriate, one researcher will assess other studies, and a second reviewer will check the data. Quality assessment will include:

- quality of random allocation concealment
- ITT analysis
- blinding of outcome assessors
- treatment and control group comparability
- comparability of other care between groups
- inclusion and exclusion criteria clearly defined
- participant blinding to allocation
- description of withdrawals and dropouts
- self-reported or objectively measured weight
- dropouts, ≤ 50% or not.

Data abstraction

Data will be abstracted independently by two researchers for the first 20 studies and any differences will be resolved by discussion. Thereafter, one researcher will assess other studies, if appropriate, and a second reviewer will check

the data. Only comparisons and outcomes identified a priori in the protocol will be included. Authors will be contacted for further details of their studies if required.

Data analysis

Where results from studies can be quantitatively combined, a statistical meta-analysis of the data will be undertaken. For dichotomous data an odds ratio will be derived, and for continuous data a WMD will be calculated (weighted by the inverse of the variance). Analyses will use a fixed effects approach. Evidence for heterogeneity across studies will be explored using the chi-squared test for heterogeneity.

Reporting

The review will be reported in the form used by the Cochrane Collaboration.

Reference

Dickersin K, Scherer R, Lefebvre C. Identifying relevant studies for systematic reviews. *BMJ* 1994; **309**:1286–91.

Appendix 2

Search strategies

In MEDLINE (1966 to 25 May 2001) and in HealthSTAR (1975 to December 2000), the first two levels of the standard Cochrane search strategy for RCTs were used, based on the strategy described by Dickersin (1994), with the following specific search terms:

1. obesity/
2. obesity in diabetes/ or obesity, morbid
3. hyperphagia/ or bulimia/
4. obes$.mp.
5. weight loss.mp.
6. overweight.tw.
7. (weight adj1 (maint$ or reduc$)).tw.
8. (los$ adj1 weight).tw.
9. (diet$ adj5 weight).tw.
10. (weight adj1 control).tw.
11. or/1-10
12. limit 11 to (newborn infant <birth to 1 month>or infant <1 to 23 months> or preschool child <2 to 5 years>or child <6 to 12 years> or adolescence <13 to 18 years>
13. 11 not 12.

Reference

Dickersin K, Scherer R, Lefebvre C. Identifying relevant studies for systematic reviews. *BMJ* 1994; **309**:1589–92.

In EMBASE (1980 to Week 19 2001) the following specific search terms were used:

1. Multicenter Study/
2. phase 2 clinical trial/
3. phase 3 clinical trial/
4. phase 4 clinical trial/
5. randomized controlled trial/
6. meta analysis/
7. crossover procedure/
8. double blind procedure/
9. single blind procedure/
10. randomization/
11. placebo/
12. drug comparison/
13. clinical study/
14. or/1-13
15. nonhuman/
16. (clin$ adj25 trial$).tw.
17. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).tw.
18. placebo$.tw.
19. random$.tw.
20. control$.tw.
21. or/16-20
22. 14 or 21
23. 22 not 15
24. obesity/
25. diabetic obesity/
26. morbid obesity/
27. hyperphagia/
28. bulimia/
29. obes$.mp.
30. weight reduction.mp.
31. overweight.tw.
32. (weight adj1 (maint$ or reduc$)).tw.
33. (los$ adj1 weight).tw.
34. (diet adj5 weight).tw.
35. (weight adj1 control).tw.
36. or/24-35
37. 23 and 36
38. limit 37 to (infant <to one year> or child <unspecified age> or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>)
39. 37 not 38

In the Commonwealth Agricultural Bureau Nutrition Abstracts and Reviews (1973 to December 2000) the following specific search terms were used:

1. exp man/
2. random$.tw.
3. trial$.tw.
4. placebo$.tw.
5. volunteer$.tw.
6. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).mp.
7. or/2-6
8. 1 and 7
9. obesity.mp.
10. overeating.mp.
11. overweight.mp.
12. overfeeding.mp.
13. weight reduction.mp.
14. obesity hyperglycaemia syndrome.mp.
15. weight losses.mp.
16. weight gain.mp.

17. or/9-16
18. 8 and 17
19. obes$.tw.
20. hyperphagi$.tw.
21. bulimi$.tw.
22. weight los$.tw.
23. (weight and maint$).tw.
24. (weight and reduc$).tw.
25. (los$ and weight).tw.
26. (diet$ and weight).tw.
27. (weight and control$).tw.
28. or/19-28
29. 17 or 29
30. 8 and 30

In BIOSIS (1985 to April 2001) the following specific search terms were used:

1. random*
2. trial*
3. placebo*
4. 1 or 2 or 3
5. human (major concept term)
6. 4 and 5
7. obes*
8. hyperphagi*
9. bulimi*
10. weight los*
11. overweight
12. weight and maint*
13. weight and reduc*
14. los* and weight
15. diet* and weight
16. weight and control*
17. or/7-16
18. 17 and 6

In CINAHL (1982 to March 2001) the following specific search terms were used:

1. exp clinical trials/
2. clinical trial.pt.
3. exp random sample/
4. random assignment/
5. research.pt.
6. (clin$ adj25 trial$).ti, ab.
7. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti, ab.
8. Placebos/
9. Placebo$.tw.
10. Random$.tw.
11. Volunteer$.tw.
12. Or/1-11
13. Animal studies/
14. 12 not 13
15. obesity/
16. obesity, morbid/
17. hyperphagia/
18. bulimia/
19. obes$.tw.
20. weight loss.tw.
21. overweight.tw.
22. (weight adj1 (maint$ or reduc$)).tw.
23. (los$ adj1 weight).tw.
24. (diet adj5 weight).tw.
25. (weight adj1 control).tw.
26. or/15-25
27. 14 and 26
28. limit 27 to (fetus <conception to birth> or newborn infant <birth to 1 month> or infant <1 to 23 months> or preschool child <2 to 5 years> or child <6 to 12 years> or adolescence <13 to 18 years>)
29. 27 not 28

In AMED (1985 to April 2001) the following specific search terms were used:

1. randomized controlled trials/
2. random allocation/
3. double blind method/
4. exp clinical trials/
5. (clin$ adj25 trial$).ti,ab.
6. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab.
7. placebo.sh.
8. placebo$.ti,ab.
9. random$.ti,ab.
10. research design.sh.
11. trial$.tw.
12. or/1-11
13. obesity/
14. bulimia/
15. obes$.mp.
16. weight loss.mp.
17. overweight.tw.
18. ((weight adj1 (maint$ or reduc$)).tw.
19. (los$ adj1 weight).tw.
20. (diet$ adj5 weight).tw.
21. (weight adj1 control).tw.
22. or/13-21
23. 12 and 22

In SPORTDiscus (1949 to March 2000) the following specific search terms were used:

1. double blind method/
2. prospective study/
3. comparative study/
4. research design/
5. placebo/
6. (clin$ adj25 trial$).ti,ab.
7. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab.
8. placebo$.ti,ab.
9. random$.ti,ab.

10. or/1-9
11. obesity/
12. hyperphagia/ or bulimia/
13. obes$.mp.
14. weight loss.mp.
15. overweight.tw.
16. (weight adj1 (maint$ or reduc$)).tw.
17. (los$ adj1 weight).tw.
18. (diet$ adj5 weight).tw.
19. (weight adj1 control).tw.
20. or/11-19
21. 10 and 20

In the UK National Research Register (2001, Issue 1) the following specific search terms were used:

1. obesity: ME
2. obesity-in-diabetes: ME
3. hyperphagia: ME
4. bulimia: ME
5. obes*
6. weight-loss: ME
7. (weight next loss)
8. overweight
9. (weight near maint*)
10. (weight near reduc*)
11. (los* near weight)
12. (diet* near weight)
13. (weight near control)
14. (#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14)

In the Cochrane Controlled Trials Register (2001, Issue 1) the following specific search terms were used:

1. OBESITY: ME
2. OBESITY-IN-DIABETES: ME
3. OBESITY-MORBID: ME
4. HYPERPHAGIA: ME
5. BULIMIA: ME
6. OBES*
7. WEIGHT-LOSS: ME
8. (WEIGHT NEXT LOSS)
9. OVERWEIGHT
10. (WEIGHT NEAR MAINT*)
11. (DIET* NEAR WEIGHT)
12. (WEIGHT NEAR CONTROL)
13. (WEIGHT NEXT REDUC*)
14. (LOS* NEXT WEIGHT)
15. (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14)
16. CHILD* : ME
17. (#15 NOT #16)
18. NEOPLASMS* : ME
19. (#17 NOT #18)

In British Library Inside (April 2001) the following specific search terms were used:

1. (obes$3 or overweight) and ((trial$1 or stud$3) and random$7) not (child$3 or rat$1 or mice or mouse or hamster$1 or porcine or murine)

In the Science Citation Index (April 2001) the following specific search terms were used:

1. (obes* or overweight) and ((trial* or stud*) and random*) not (child* or rat* or mice or mouse or hamster* or porcine or murine)

In PsycINFO (1967 to May 2001) the following specific search terms were used:

1. obes*
2. hyperphagia*
3. binge eating
4. bulimi* near non-purging
5. weight near1 los*
6. weight near1 control
7. overweight
8. weight near1 (maint* or reduc*)
9. diet* near5 weight
10. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9
11. AG = “adolescence”
12. 10 and (AG = adolescence)
13. AG = “childhood”
14. 10 and (AG = childhood)
15. AG = “infancy”
16. 10 and (AG = infancy)
17. AG = “neonatal”
18. 10 and (AG = neonatal)
19. AG = “pre-school age”
20. 10 and (AG = pre-school age)
21. AG = “school-age”
22. 10 and (AG = school-age)
23. #12 or #14 or #16 or #18 or #20 or #22
24. 10 not 23
25. PO = “animal”
26. 24 and (PO = animal)
27. 24 not 26
28. PO = “human”
29. 24 and (PO = human)
30. 26 and 29
31. 27 or 30
32. clin* near25 trial*
33. (singl* or doubl* or trebl* or tripl*) near25 (blind* or mask*)
34. placebo*
35. random*
36. control*
37. #32 or #33 or #34 or #35 or #36
38. 31 and 37

Appendix 3

Reviews searched for RCTs

Anderson JW, Konz EC, Frederich RC, Wood CL. Long-term weight-loss maintenance: a meta-analysis of US studies. *Am J Clin Nutr* 2001;**74**:579–84.

Anon. Popular diets: a scientific review. *Obes Res* 2001; **9**(Suppl 1).

Astrup A, Rossner S. Lessons from obesity management programmes: greater initial weight loss improves long term maintenance. *Obes Rev* 2000;1:17–19.

Astrup A, Grunwald GK, Melanson EL, Saris WH, Hill JO. The role of low-fat diets in body weight control: a meta-analysis of *ad libitum* dietary intervention studies. *Int J Obes* 2000;**24**:1545–52.

Astrup A, Ryan L, Grunwald GK, Storgaard M, Saris W, Melanson E, *et al*. The role of dietary fat in body fatness: evidence from a preliminary meta-analysis of *ad libitum* low-fat dietary intervention studies. *Br J Nutr* 2000;**83**(Suppl 1):S25–32.

Ayyad C, Andersen T. Long-term efficacy of dietary treatment of obesity: a systematic review of studies published between 1931 and 1999. *Obes Rev* 2000; **1**:113–19.

Blair SN, Brodney S. Effects of physical inactivity and obesity on morbidity and mortality: current evidence and research issues. *Med Sci Sports Exerc* 1999; **31**:S646–67.

Boule NG, Haddad E, Kenny GP, Wells GA, Sigal RJ. Effects of exercise on glycaemic control and body mass in type 2 diabetes mellitus. A meta-analysis of controlled clinical trials. *JAMA* 2001;**286**:1218–27.

Brown SA, Upchurch S, Anding R, Winter M, Ramirez G. Promoting weight loss in type II diabetes. *Diabetes Care* 1996;**19**:648.

Douketis JD, Feightner JW, Attia J, Feldman WF, with the Canadian Task Force on Preventive Health Care. Periodic health examination, 1999 update: 1. Detection, prevention and treatment of obesity. *CMAJ* 1999; **160**:513–25.

Ebrahim S, Smith GD. Systematic review of randomised controlled trials of multiple risk factor interventions for preventing coronary heart disease. *BMJ* 1997; **314**:1666–74.

Ebrahim S, Smith GD. Lowering blood pressure: a systematic review of sustained effects of non-pharmacological interventions. *J Public Health Med* 1998;**20**:441–8.

Fagard RH. Physical activity in the prevention and treatment of hypertension in the obese. *Med Sci Sports Exerc* 1999;**31**:S624–30.

Fogelholm M, Kukkonen-Harjula K. Does physical activity prevent weight gain? A systematic review. *Obes Rev* 2000;**1**:95–111.

Foxcroft DR, Milne R. Orlistat for the treatment of obesity: rapid review and cost-effectiveness model. *Obes Rev* 2000;**1**:121–6.

Goldstein DJ, Potvin JH. Long-term weight loss: the effect of pharmacologic agents. *Am J Clin Nutr* 1994; **60**:647–57.

Harvey EL, Glenny A-M, Kirk SF, Summerbell CD. Improving health professionals' management and the organisation of care for overweight and obese people (Cochrane Review). In *The Cochrane Library* (Issue 1). 2002. Oxford: Update Software; 2002.

Hennrikus DJ, Jeffrey RW. Worksite intervention for weight control: a review of the literature. *Am J Health Promot* 1996;**10**:471–98.

Hermansen K. Diet, blood pressure and hypertension. *Br J Nutr* 2000;**83**(Suppl 1):S113–19.

Hooper L, Summerbell CD, Higgins JP, Thompson RL, Clements G, Capps N, *et al*. Reducing or modified dietary fat for preventing cardiovascular disease (Cochrane Review). In *The Cochrane Library* (Issue 1). Oxford: Update Software; 2002.

Johanesen K. Efficacy of metformin in the treatment of NIDDM. *Diabetes Care* 1999;**22**:33–7.

Kelley DE, Goodpaster B. Effects of physical activity on insulin action and glucose tolerance in obesity. *Med Sci Sports Exerc* 1999;**31**:S619–23.

Kelley GA. Aerobic exercise and resting blood pressure among women: a meta-analysis. *Prev Med* 1999;**28**:265–75.

Ketola E, Sipila R, Makela M. Effectiveness of individual lifestyle interventions in reducing cardiovascular disease and risk factors. *Ann Med* 2000;**32**:239–51.

Kushner RF, Foster GD. Obesity and quality of life. *Nutrition* 2000;**16**:947–52.

Little R, Yau L. Intent-to-treat analysis for longitudinal studies with drop-outs. *Biometrics* 1996;**52**:1324–33.

Mertens IL,Van Gaal LF. Overweight, obesity, and blood pressure: the effects of modest weight reduction. *Obes Res* 2000;**8**:270–8.

National Task Force on the Prevention and Treatment of Obesity. Very low-calorie diets. *JAMA* 1993;**270**:967–74.

National Task Force on the Prevention and Treatment of Obesity. Long-term pharmacotherapy in the management of obesity. *JAMA* 1996;**276**:1907–15.

Nisoli E, Carruba MO. An assessment of the safety and efficacy of sibutramine, an anti-obesity drug with a novel mechanism of action. *Obes Rev* 2000;**1**:127–39.

Pirozzo S, Cameron C, Glasziou P, Summerbell C. Advice on low-fat diets for reducing obesity (Protocol for a Cochrane Review). In *The Cochrane Library* (Issue 1). Oxford: Update Software; 2002.

Poston WS, Haddock CK, Dill PL, Thayer B, Foreyt JP. Lifestyle treatments in randomized clinical trials of pharmacotherapies for obesity. *Obes Res* 2001;**9**:552–63.

Pronk NP, Wing RR. Physical activity and long-term maintenance of weight loss. *Obes Res* 1994;**2**:587–99.

Rissanen A, Fogelholm M. Physical activity in the prevention and treatment of other morbid conditions and impairments associated with obesity: current evidence and research issues. *Med Sci Sports Exerc* 1999; **31**:S635–45.

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Appendix 4

Trial eligibility form

Trial author and date		**Refman number**
Checked by		

	Yes	**No**	**Unclear, with details**
Randomised controlled trial			
Data available for one year or more			
Average or median starting BMI ≥ 28kg/m²			
Average or median age of all groups ≥ 18 years			
Designed to reduce weight or prevent weight gain			

	Control	**Treatment 1**	**Treatment 2**	**Treatment 3**	**Treatment 4**
Surgery					
Diet					
Exercise					
Behavioural					
Drugs, specify					
Alternative medicine					
Other					

Data available	**Yes**	**No**	**Unclear, with details**
Anthropometry			
Risk factors			

Appendix 5

Quality assessment form

Trial author and date	
Refman number	
Extracted by	
Checked by	

	POTENTIAL FOR SELECTION BIAS AT TRIAL ENTRY	**Score**	**Query/comments**
1	**Quality of random allocation concealment** A = good attempt at concealment, method should not allow disclosure of assignment (telephone, third party, etc.) B (I) = states random allocation but no description given B (II) = attempt at concealment but real chance of disclosure of assignment prior to formal trial entry (envelopes without third party involvement, random numbers table procedure not described) C = definitely not concealed (open random numbers tables or quasi-randomised, e.g. day of week, date of birth, alternation)		
	POTENTIAL FOR SELECTION BIAS IN ANALYSIS		
2	**Was there a description of withdrawals and dropouts?** A = states numbers and reasons for withdrawals B(I) = states numbers of withdrawals only B(II) = states withdrawals but no number given C = not mentioned		
3	**Was the analysis on intention to treat (or is it possible to do so on available data)?** A = yes B = possibly, but not clear C = no		
	POTENTIAL FOR BIAS AROUND TIME OF TREATMENT OR DURING OUTCOME ASSESSMENT (BLINDING)		
4	**Were patients blinded to treatment status (e.g. placebo)?** A(I) = action taken at blinding likely to be effective A(II) = blinding stated but no description given B(I) = no mention of blinding B(II) = attempt at blinding but reason to think it may not have been successful C = not blinded		

5	**Were healthcare providers 'blind' to treatment status (e.g. placebo)?** A(I) = action taken at blinding likely to be effective A(II) = blinding stated but no description given B(I) = no mention of blinding B(II) = attempt at blinding but reason to think it may not have been successful C = not blinded		
6	**Were the outcome assessors blinded to treatment status?** A(I) = action taken at blinding likely to be effective A(II) = blinding stated but no description given B(I) = no mention of blinding B(II) = attempt at blinding but reason to think it may not have been successful C = not blinded		

Appendix 6

Data extraction form

Trial author and date	
Refman number	
Extracted by	
Checked by	

Location	
Period of study	
Method of recruitment and sampling	

Participants' general description Targeted particularly at: Diabetic or impaired glucose tolerance Y/N Hypertensive Y/N Hyperlipidaemia Y/N Binge eating Y/N	
Inclusion criteria	Exclusion criteria

	YES	NO	DETAILS
Pretreatment phase?			

	YES	NO	DETAILS
Subgroup analysis?			

	YES	NO	DETAILS
Groups comparable at baseline?			

Notes	

Details of interventions

Study ID:

	Control group	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Description of intervention					
Timing of intervention period 1. Start 2. End 3. Duration 4. Number of times contacted 5. Frequency of contact					
Health professional involvement (role, timing)					
Type of intervention Individual/Group/Both					
Other details of care					

Study population baseline characteristics

Study ID:

	Control	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Overall
Sex						
Age (range, mean, SD)						
Smoking status						
Social class						
Ethnic group						
Weight kg						
Height m						
BMI (kg/m^2)						
% Ideal body weight						
Waist circumference (give units)						

Study population baseline characteristics

Study ID:

	Control	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Overall
Total cholesterol (give units)						
LDL cholesterol (give units)						
HDL cholesterol (give units)						
Triglycerides (give units)						
Systolic blood pressure (mmHg)						
Diastolic blood pressure (mmHg)						
HbA_{1c} (%)						
Fasting plasma glucose (give units)						
Psychological health ratings						

Participant flow for weight data only

Study ID:

	Control	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Overall
Number eligible						
Number assigned/ selected to each group						
Numbers present for weight at time=						
Numbers present for weight at time=						
Numbers present for weight at time=						
Number assessed at end of study, with details						
Number completed at end of study						
% dropout at end of study						
Number dead at end of study						

	Control	Treatment 1	Treatment 2	Treatment 3	Treatment 4
Period of active intervention					
Maximum length of trial (includes intervention period)					

Outcomes (use a different page for each time of follow-up, starting at one year)

Study ID: Timing:

Outcome	Statistics	Control	*N* =	Treatment 1	*N* =	Treatment 2	*N* =	Treatment 3	*N* =	Treatment 4	*N* =
Deaths											
Morbidity											
Adverse events											
Compliance											
Quality of life											
Economic											

Outcomes (use a different page for each time of follow-up, starting at one year)

Study ID: Timing:

Outcome	Statistics and who measured	Control	*N* =	Treatment 1	*N* =	Treatment 2	*N* =	Treatment 3	*N* =	Treatment 4	*N* =
Weight (kg)											
Height (m)											
BMI (kg/m^2)											
% Ideal body weight											
Waist circumference (give units)											

Outcomes (use a different page for each time of follow-up, starting at one year)

Study ID: Timing:

Outcome	Statistics and who measured	Control	*N* =	Treatment 1	*N* =	Treatment 2	*N* =	Treatment 3	*N* =	Treatment 4	*N* =
Total cholesterol (give units)											
LDL cholesterol (give units)											
HDL cholesterol (give units)											
Triglycerides (give units)											
Systolic blood pressure (mmHg)											
Diastolic blood pressure (mmHg)											
HbA_{1c} (%)											
Fasting plasma glucose (give units)											
Psychological health ratings											

Appendix 7

References to included studies

*Indicates primary reference to study.

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Appendix 8

Tables of included studies

TABLE 18 *Included orlistat studies*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Broom, 2001[a]	**Randomisation**: minimisation algorithm: primary criterion was primary defined cardiovascular risk factor, secondary criterion was study centre, then BMI (28–34.9 or 35–39.9 or ≥ 40 kg/m^2) and weight loss in 2-week pretreatment phase (≤ 2 kg vs > 2 kg). Allocation concealment:[a] B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 54 GP surgeries and 12 hospital clinics in UK **Period of study**: before August 2001 **Inclusion criteria**: men and non-pregnant women, 18–80 years, BMI ≥ 28 kg/m^2, at least one of the following: IGT (serum glucose ≥ 8.0 mmol/l, 2 hours after a standard OGTT), hypercholesterolaemia (total serum cholesterol ≥ 5.2 mmol/l or LDL cholesterol ≥ 4.2 mmol/l at screening); hypertension (sitting DBP 90–105 mmHg); compliance 60% or more throughout the study **Exclusion criteria**: lactation, women of childbearing potential not using adequate contraception, MI, coronary artery bypass graft, percutaneous coronary angioplasty in prior 3 months, gastrointestinal surgery for weight reduction, active gastrointestinal disorders, e.g. peptic ulcer disease or malabsorption syndromes, pancreatic disease, history of postsurgical adhesions, excessive alcohol intake or substance abuse, participants who required any drug that may alter body weight or plasma lipids, e.g. appetite suppressants, lipid-lowering resins, retinoids and fish oil supplements, administration of systemic steroids (other than HRT) not permitted, concomitant pharmacotherapy for type 2 diabetes, hypertension or hypercholesterolaemia not permitted **Gender**: 409 women, 113 men **Age** (years): mean (SD) a: 46.7 (11.4), b: 45.3 (11.5) BMI (kg/m^2): mean (SD) a: 37.1 (6.4), b: 37.0 (6.2) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 13 times (baseline then at monthly intervals) **Description of intervention**: a + b: 2 weeks pretreatment phase consisting of single-blind placebo and 600 kcal/day deficit (min. 1200 kcal/day), 30% energy intake from fats, food and beverage intake diary; deficit diet continued postrandomisation to month 6 then reduced a further 300 kcal/day to week 52 a: 120 mg orlistat 3 times daily with main meals b: placebo 3 times daily with main meals **Allocated**: a: 265, b: 266 **Completed**: a: 186, b: 161 at 12 months **% Dropout**: a: 30%, b: 40% at 12 months **Assessed**: a: 259, b: 263 at 12 months ('ITT')	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose, adverse events, compliance, deaths	SDs for change in risk factor outcomes at 12 months calculated. SDs for change in HbA_{1c} and mean and SD change in fasting plasma glucose at 12 months obtained from Roche report **Sponsorship**: Roche Pharmaceuticals

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Broom, 2001[b]	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 12 outpatient clinics in UK specialising in obesity and/or dyslipidaemia **Period of study**: before August 2001 **Inclusion criteria**: either gender, ≥ 18 years, women of childbearing potential if using adequate protection, BMI ≥ 30 kg/m^2, total plasma cholesterol ≥ 6.5 mmol/l, or plasma LDL cholesterol ≥ 4.2 mmol/l **Exclusion criteria**: MI or major surgery in past 3 months, gastrointestinal or pancreatic disease, type 1 diabetes, uncontrolled hypertension, history of carcinoma, gastrointestinal surgery for weight loss, postsurgical adhesions, bulimia or laxative abuse, drug or alcohol abuse, treatment with drugs altering appetite or lipid concentrations, fish oil supplements, retinoids, systemic steroids (other than sex hormone replacements) or anticoagulants **Gender**: 83 women, 54 men **Age** (years): mean (SD) a: 52.1 (9.2), b: 51.0 (10.5) **BMI** (kg/m^2): mean (SD) a: 36.5 (5.48), b: 37.1 (6.27) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 52 weeks contacted 11 times (baseline, every 4 weeks to week 24, then at weeks 30, 36, 44 and 52) **Description of intervention**: a + b: 600 kcal/day deficit diet from each of 5 major food groups with 30% calorie intake from fat, maximum 300 mg/day cholesterol; advice on physical activity a: orlistat 120 mg 3 times daily with main meals for 52 weeks (double-blind to week 24 then open-label design weeks 25–52) b: placebo 3 times daily with main meals for first 24 weeks then orlistat 120 mg 3 times daily in open-label design for weeks 25–52 **Allocated**: a: 71, b: 71 **Completed**: a: 34, b: 43 at 52 weeks **% Dropout**: a: 52%, b: 39% at 52 weeks **Assessed**: a: 66, b: 71 at 52 weeks ('ITT' LOCF; 5 participants excluded)	**Length of follow-up**: 52 weeks **Outcomes**: weight data, total cholesterol, LDL cholesterol, fasting plasma glucose, adverse events	SDs calculated and denominators assumed correct **Sponsorship**: Roche Products Limited

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Davidson, 1999	**Randomisation**: 75% orlistat: 25% placebo, stratified (< 2 kg or ≥ 2 kg weight loss during 4 weeks lead-in before randomisation), participants treated with orlistat 120 mg (a) rerandomised at end of year 1. Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 18 US research centres **Period of study**: October 1992–October 1995 **Inclusion criteria**: either gender, >18 years, BMI 30–43 kg/m^2, adequate contraception in women of childbearing potential, all vitamin and mineral preparations were discontinued 8 weeks prior to start of study, ≥ 75% treatment compliance by capsule count during 4-week run-in period, ≥ 70% treatment adherence in year 1 to continue to year 2 **Exclusion criteria**: weight loss > 4 kg in previous 3 months, frequently changed smoking habits or had stopped smoking in past 6 months, history or presence of substance abuse, excessive alcohol intake, significant cardiac, renal, hepatic, gastrointestinal, psychiatric or endocrine disorder; drug-treated type 2 diabetes mellitus, concomitant use of medications altering appetite or lipid levels **Gender**: 741 women, 139 men **Age** (years): mean (SEM) a: 43.3 (0.6), b: 44.0 (0.7) **BMI** (kg/m^2): mean (SEM) a: 36.5 (0.9), b: 36.2 (0.1) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 24 months, contacted 23 times (baseline, every 2 weeks to week 16, then every 4 weeks to week 52, then every 8 weeks to week 104) **Description of intervention**: a + b: 500–800 kcal/day deficit with 30% energy intake from fats in 4-weeks single-blind placebo pretreatment phase, then continued for 2 years; if participant still losing weight in last 3 months of year 1 then energy intake increased 200–300 kcal/day; food diaries kept by participant and used periodically for counselling with dietitian; participant encouraged to increase activity by walking briskly for 20–30 minutes/week throughout 2 years, 4 behaviour modification sessions on weight loss in year 1 then 4 weight maintenance seminars in year 2; once-daily multivitamin containing all fat-soluble vitamins (Centrum) given in year 1 only if serum vitamin values decreased to below reference range on 2 consecutive visits a: 120 mg orlistat 3 times daily for year 1 b: placebo 3 times daily for year 1 and year 2 a: rerandomised at week 52 to: c: placebo 3 times daily d: orlistat 120 mg 3 times daily e: orlistat 60 mg 3 times daily **Allocated**: a: 668, b: 224 **Completed**: a: 458, b: 133 year 1 **Assessed**: a: 657, b: 223 at 12 months (LOCF but not ITT and for weight and blood pressure data only) **% Dropout**: a: 31%, b: 41% at 12 months; b: 57%, c 31%, d: 29%, e: 33% at 24 months	**Length of follow-up**: 2 years **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose, adverse events, compliance, deaths, cancers	2-year results only stated for participants receiving placebo/placebo (group b) and orlistat 120 mg 3 times daily/orlistat 120 mg 3 times daily (groups a and d). **Sponsorship**: Hoffman-La Roche

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Finer, 2000	**Randomisation**: blinded code numbers randomised in blocks of 4 printed on labels of double-blind medication and supplied in identical blister packs. Allocation concealment: A **Assessor blinding**: yes **ITT**: no	**Location**: 5 UK centres **Period of study**: before February 1999 **Inclusion criteria**: either gender, ≥ 18 years, BMI 30–43 kg/m^2, women of childbearing potential if using adequate contraceptive precautions, > 75% compliance (returned tablets) during run-in phase **Exclusion criteria**: weight loss > 4 kg in 3 months before screening, history of severe systemic disease including diabetes, uncontrolled hypertension, previous gastrointestinal disease, surgery for weight reduction, history of postsurgical adhesions, history or presence of cancer, psychiatric or neurological disorder requiring chronic medications or liable to prejudice participant compliance, alcohol or substance abuse, bulimia or laxative abuse, pregnancy, lactation, postmenopausal women, amenorrhoeic <1 year, drugs capable of influencing body weight, resins for lipid lowering, anticoagulants, digoxin or lipid-soluble vitamin supplements within previous month **Gender**: 193 women, 25 men **Age** (years): mean (SD) a: 41.5 (10.5), b: 41.4 (10.0) **BMI** (kg/m^2): mean (SD) a: 36.8 (3.6), b: 36.8 (3.7) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 17 times (baseline, before and after 4-week run-in, every 2 weeks until week 12, then every month until month 12) **Description of intervention**: a + b: pretreatment phase of 4-week single-blind run-in, then 600 kcal/day deficit diet (min. 1200 kcal/day), 30% fat, alcohol 150 g/week, aimed to produce initial weight loss of 0.25–0.5 kg/week, reduced by further 300 kcal/day at week 24 until week 52 (or reduced to 1000 kcal/day if already at 1200 kcal/day) a: 120 mg orlistat 3 times daily b: placebo 3 times daily **Allocated**: a: 114 b: 114 **Completed**: a: 73, b: 66 at 12 months **% Dropout**: a: 36%, b: 42% at 12 months **Assessed**: a: 59, b: 61 at 12 months (completer analysis excluding participants who violated protocol); a: 110, b: 108 at 12 months ('ITT' LOCF, although 10 participants excluded)	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, adverse events	SDs for change in weight calculated **Sponsorship**: F Hoffman-La Roche

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Hauptman, 2000	**Randomisation**: personal communication. Allocation concealment: A **Assessor blinding**: no details given **ITT**: no	**Location**: 17 primary care centres in USA **Period of study**: before June 1999 **Inclusion criteria**: either gender, >18 years, BMI 30–44 kg/m^2, completed 4-week pretreatment phase with 75% or more compliance (by capsule count) **Exclusion criteria**: pregnancy, lactation, women of childbearing potential not taking adequate contraception; weight loss > 4 kg last 3 months, history of significant cardiac, renal, hepatic or gastrointestinal disorders, uncontrolled hypertension or other clinically significant condition, gastrointestinal surgery for weight reduction, bulimia or laxative and/or substance abuse, abnormal laboratory measures (values ≥ 10% of reference value for the normal range and sufficient to require medical follow-up by study physician), change in smoking habits in previous 6 months, use of any drug that may influence body weight or food intake in 8 weeks before screening **Gender**: 497 women, 138 men **Age** (years): mean (SD) a: 42.6 (11.68), b: 43.2 (10.14) c: 41.6 (10.19) **BMI** (kg/m^2): mean (SD) a: 35.8 (4.38), b: 36.0 (2.90), c: 36.1 (4.37) at 4 weeks before randomisation **Baseline comparability**: yes	**Timing of active intervention**: a + b: 104 weeks, contacted 21 times (baseline, every 2 weeks for first month then every 4 weeks until week 52, then every 8 weeks until week 104) **Description of intervention**: a + b + c: 4-week single-blind placebo pretreatment phase of 1200 kcal/day diet for participants who weighed < 90 kg initially or 1500 kcal/day for participants who weighed ≥ 90 kg initially; 30% energy intake from fats, 50% CHO, 20% protein, maximum 300 mg/day cholesterol, maximum 10 alcoholic drinks/week; dietary guidance on intake from study physician at start of pretreatment only, diet continued for first 52 weeks then increased by 300 kcal/day for participants still losing weight at end of week 52 or no dietary adjustment for those whose weight was stable until week 104; participants viewed videos on behaviour modification techniques for weight control 4 times in first 52 weeks, weight management and diet pamphlets for weight maintenance given 4 times during weeks 53–104 based on 'Live for Life' programme, all participants encouraged to increase physical activity by brisk walking for 20–30 minutes 3–5 times/week; dietary records kept 10 times during study a: 60 mg orlistat 3 times daily with main meals b: 120 mg orlistat 3 times daily with main meals c: placebo 3 times daily with main meals **Allocated**: a: 213, b: 210, c: 212 **Completed**: a: 154, b: 151, c: 122 at 12 months; a: 120, b: 117, c: 91 at 24 months **% Dropout**: a: 28%, b: 28%, c: 42% at 12 months (% participants who completed 1 year greater in both orlistat groups than placebo (p = 0.001); a: 44%, b: 44%, c: 57% at 24 months **Assessed**: a: 213, b: 210, c: 212, at 12 months and at 24 months ('ITT'): a: 120, b: 117, c: 91 at 12 months and at 24 months (completer analysis)	**Length of follow-up**: 24 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose, adverse events, compliance, deaths	Change in weight including SDs calculated (change from –4 weeks to week 52 minus change from –4 weeks to week 0), change in risk factors calculated from actual values, SDs also calculated **Sponsorship**: none mentioned, first author at Hoffman-La Roche

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Hill, 1999	**Randomisation**: stratified (≤ 10%, or > 10% weight loss in pretreatment phase). Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 17 US clinical research centres **Period of study**: before August 1998 **Inclusion criteria**: either gender, ≥ 18 years, BMI 28–43 kg/m^2, lost 8% or more of initial body weight during 6-month run-in phase **Exclusion criteria**: ever had significant medical disorders, uncontrolled hypertension, recurrent nephrolithiasis, symptomatic cholelithiasis, active gastrointestinal disorders, type 2 diabetes, pancreatic disease, cancer, pregnancy, lactating women, history or presence of substance abuse, eating disorders, excessive alcohol intake, significantly abnormal laboratory test results, previous gastrointestinal surgery for weight reduction, history of postsurgical adhesions, any medications known to influence body weight, appetite or lipid concentrations taken in 8 weeks before screening **Gender**: 605 women, 115 men **Age** (years): mean (SEM) a: 46.8 (0.8), b: 46.4 (0.7), c: 46.1 (0.7), d: 45.9 (0.7) **BMI** (kg/m^2): mean (SEM) a: 32.6 (0.2), b: 32.8 (0.2), c: 32.9 (0.2), d: 32.8 (0.2) **Baseline comparability**: body weight significantly different in orlistat 60 mg 3 times daily (group c) from all other groups ($p < 0.05$) accounted for by higher proportion of men to women in group c	**Timing of active intervention**: a–d: 12 months, contacted 11 times (baseline, every 2 weeks during month 1, then every month to month 5, then every 2 months to month 12) **Description of intervention**: a–d: 6-month pretreatment phase consisting of 1000 kcal/day deficit, 30% energy intake from fat, 50% from CHO, 20% from protein, to produce weight loss of 0.5–1 kg/week; dietary counselling, 4 sessions of behavioural modification programme (University of Minnesota's Wise Weighs) and encouraged to increase activity to brisk walking for 20–30 minutes 5 times/week, standard multivitamin–multimineral tablets once daily (Centrum) from start of pretreatment to end of study a–d: from randomisation, participants prescribed maintenance diet where individual energy requirements reassessed according to body weight at week 22 of pretreatment phase; increase in energy intake prescribed to match anticipated metabolic requirements over 1 year, if participants gained weight they were encouraged to maintain this higher weight, dietary and behavioural counselling given to all, dietary records a: 30 mg orlistat 3 times daily b: placebo 3 times daily c: 60 mg orlistat 3 times daily d: 120 mg orlistat 3 times daily **Allocated**: a: 187, b: 188, c: 173, d: 181 **Completed**: a: 140, b: 138, c: 133, d: 126 **Assessed**: a: 119, b: 121, c: 116, d: 113 at 12 months (for weight outcome only) **% Dropout**: a: 25%, b: 27%, c: 23%, d: 30% at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, adverse events, compliance	All outcomes calculated from initial values to week 52 minus initial values to end of 6-month lead-in (denominators differ), SDs for weight change calculated **Sponsorship**: F Hoffman-La Roche

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Hollander, 1998	**Randomisation**: stratified by weight loss and glucose control during 5-week pretreatment: weight loss ≤ 2 kg, glucose 5.6–8.9 mmol/l; weight loss ≤ 2 kg, glucose 9.0–12.2 mmol/l; weight loss > 2 kg, glucose 5.6–8.9 mmol/l; weight loss > 2 kg, glucose 9.0–12.2 mmol/l. Allocation concealment: A **Assessor blinding**: yes **ITT**: possibly as no denominators stated for outcomes	**Location**: 12 diabetic clinic centres in USA **Period of study**: before February 1998 **Inclusion criteria**: either gender, > 18 years, BMI 28–40 kg/m^2, type 2 diabetes, clinically stable on glyburide or glypizide for 6 months or more; HbA_{1c} 6.5–10% at screening, fasting plasma glucose 5.6–12.2 mmol/l at end of 4th week of pretreatment, blood levels of fat-soluble vitamins above lower limit of normal reference range, completion and compliance by tablet count of ≥ 70% during pretreatment **Exclusion criteria**: pregnancy, lactation, women of childbearing potential not taking adequate contraceptive measures, clinically relevant conditions, e.g. psychiatric disorders, substance abuse, cholecystitis, pancreatic disease, uncontrolled hypertension, significant complications associated with diabetes, weight loss of > 4 kg during past 3 months, history of recurrent nephrolithiasis or symptomatic cholelithiasis, gastrointestinal surgery for weight reduction, history of bulimia or laxative abuse or if they had taken any drug that may influence body weight or plasma lipids in 8 weeks before start of study **Gender**: 157 women, 164 men **Age** (years): mean (SD) a: 55.4 (8.8), b: 54.7 (9.7) **BMI** (kg/m^2): mean (SD) a: 34.5 (3.2), b: 34.0 (3.4) **Baseline comparability**: yes	**Timing of active intervention**: 12 months, contacted 14–27 times (baseline, weeks 1 and 2, then every 2–4 weeks) **Description of intervention**: a + b: 5 weeks pretreatment phase single blind with mildly hypocaloric diet, then 500 kcal/day deficit from baseline to week 52, additional diet counselling and a standardised commercially available vitamin supplement given if 2 consecutive vitamin measures fell below reference range a: 120 mg orlistat 3 times daily taken with meals b: placebo 3 times daily taken with meals **Allocated**: a: 162, b: 159 **Completed**: a: 115, b: 139 at 12 months **% Dropout**: a: 15%, b: 28% at 12 months **Assessed**: a: 162, b: 159 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, HbA_{1c}, fasting plasma glucose, adverse events	All mean and SD change in weight and risk factor outcomes obtained from Roche report **Sponsorship**: Hoffman-La Roche

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Lindgarde, 2000	**Randomisation**: randomisation was minimised by participants' primary defined CHD risk factor, study centre and weight loss achieved in 2-week lead-in period (≤ 1 kg, or > 1 kg). Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: possibly but unclear	**Location**: 33 primary care centres in Sweden **Period of study**: before February 2000 **Inclusion criteria**: men and non-pregnant women, 18–75 years, BMI 28–38 kg/m^2, fasting serum glucose ≥ 6.7 mmol/l, or confirmed type 2 diabetes treated with sulfonylurea or metformin but not insulin; total serum cholesterol ≥ 6.5 mmol/l and/or LDL cholesterol ≥ 4.2 mmol/l on at least 2 occasions or prescribed lipid-lowering medications; DBP ≥ 90 mmHg on at least 2 occasions or confirmed hypertensive treated with antihypertensive medication **Exclusion criteria**: insulin-treated participants, women of childbearing potential who were lactating or using inadequate contraception; MI within 3 months before screening, gastrointestinal surgery for weight reduction, active gastrointestinal disorders, e.g. peptic ulcer disease or malabsorption syndromes (with the exception of controlled lactose intolerance), pancreatic disease, history of postsurgical adhesions, excessive alcohol or substance abuse, participants requiring any drug that may alter body weight or plasma lipids, e.g. appetite suppressants, lipid-lowering resins, retinoids or fish oil supplements; systemic steroids (other than HRT) and insulin **Gender**: 239 women, 137 men **Age** (years): mean (SD) a: 53.7 (9.4), b: 53.2 (9.9) at 2 weeks prior to randomisation **BMI** (kg/m^2): mean (SD) a: 33.2 (3.0), b: 33.2 (3.1) at 2 weeks prior to randomisation **Baseline comparability**: yes	**Timing of active intervention**: 12 months, contacted 11 times (baseline, twice in first month, then monthly to month 6, then every 2 months to month 12) **Description of intervention**: a + b: 2-week single-blind placebo plus mildly hypocaloric diet consisting of 600 kcal/day deficit (minimum 1200 kcal/day), 30% energy from fat, diet continued up to month 6 when energy content reduced additional 300 kcal/day; participants also received dietary counselling as part of self-help weight control educational package including leaflets and videotape given at start of run-in phase; participants encouraged to increase physical activity by taking 30 minutes' walk each day a: 120 mg orlistat 3 times daily b: placebo 3 times daily **Allocated**: a: 190, b: 186 **Completed**: a: 159, b: 164 at 12 months **% Dropout**: a: 16%, b: 12% at 12 months **Assessed**: a: 190, b: 186 at 12 months (possibly ITT, all randomised participants included in ITT analysis, but participants withdrawn by investigators if compliance < 60%)	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, HbA_{1c}, fasting plasma glucose, adverse events, compliance, deaths	Change including SDs, in weight and risk factor outcomes at 12 months calculated (change from –2 weeks to week 52 minus change from –2 weeks to week 0), SDs for change in weight also calculated **Sponsorship**: Roche AB

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Rossner, 2000	**Randomisation**: stratified according to weight loss in pretreatment phase (stratification figures not stated). Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 14 European centres **Period of study**: before November 1998 **Inclusion criteria**: either gender, ≥ 18 years, BMI 28–43 kg/m^2, completed 4-week pretreatment phase and ≥ 75% compliance (by capsule count) **Exclusion criteria**: pregnancy, lactation, women of childbearing potential not taking adequate contraception, clinically significant conditions (excluding obesity) that might affect study outcome, > 4-kg weight loss in previous 6 months, gastrointestinal surgery for weight loss, history of postsurgical adhesions or of bulimia or laxative abuse, any drug that may influence body weight or serum lipids taken in 8 weeks before screening; uncontrolled hypertension, drug-treated diabetes mellitus, history or presence of symptomatic cholelithiasis **Gender**: 591 women, 127 men **Age** (years): mean (SD) a: 44.7 (10.7), b: 43.6 (11.4), c: 44.3 (10.8) **BMI** (kg/m^2): mean (SD) a: 35.2 (3.9), b: 34.7 (3.7), c: 35.3 (4.1) **Baseline comparability**: yes, baseline data stated for safety population only (n = 718)	**Timing of active intervention**: a + b: 24 months, contacted 18 times (baseline, every 2 weeks for first 2 months, then monthly up to month 6, then every 2 months to month 24) **Description of intervention**: a + b + c: 4-week pretreatment phase consisting of single-blind placebo and 600 kcal/day deficit, 30% energy intake from fat, all participants ceased taking vitamin supplements before study and if vitamin or β-carotene levels fell below clinical reference range on 2 consecutive measurements then participants were given supplements; at randomisation deficit diet continued and during year 2 diet was adjusted as follows: for participants who had lost ≥ 3 kg between weeks 40 and 52 daily calorie intake was prescribed at a level equivalent to estimated energy intake minus 10% kcal/day; for participants who lost < 3 kg no dietary adjustment was made a: 60 mg orlistat 3 times daily with breakfast, lunch and dinner b: 120 mg orlistat 3 times daily with breakfast, lunch and dinner c: placebo 3 times daily with breakfast, lunch and dinner **Allocated**: a: 242, b: 244, c: 243 **Completed**: a: 140, b: 159, c: 136 at 24 months **% Dropout**: a: 42%, b: 35%, c: 44 at 24 months **Assessed**: a: 239, b: 241, c: 236 ('ITT', LOCF)	**Length of follow-up**: 24 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, DBP, SBP, fasting plasma glucose, adverse events, compliance, QoL	Roche provided denominators, change in risk factors calculated, SDs calculated, weight change from randomisation to 12 months and 24 months derived from graph **Sponsorship**: F Hoffman-La Roche

continued

TABLE 18 *Included orlistat studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Sjostrom, 1998	**Randomisation**: randomisation numbers generated by sponsors (Roche) and incorporated into double-blind labelling, randomisation done in blocks of 4 to produce equal numbers in both groups, stratified by weight loss in 4-week pretreatment phase. Allocation concealment: A **Assessor blinding**: no details given **ITT**: no	**Location**: 15 European centres **Period of study**: before July 1998 **Inclusion criteria**: either gender, ≥ 18 years, BMI 28–47 kg/m^2, women of childbearing potential if using adequate contraception, > 75% compliance during pretreatment phase at end of year 1 to continue to year 2 **Exclusion criteria**: serious diseases including uncontrolled hypertension (DBP ≥ 105 mmHg) and pharmacologically treated diabetics, weight loss > 4 kg in 3 months before screening, surgery for weight reduction, history of postsurgical adhesions, bulimia or laxative abuse, use of any drug that may influence body weight or plasma lipids in past month, drug or alcohol abuse **Gender**: 567 women, 116 men **Age** (years): mean (range) a: 45.2 (20–76), b: 44.3 (18–77) **BMI** (kg/m^2): mean a: 36.1, b: 36.2 **Baseline comparability**: yes	**Timing of active intervention**: a + b: 4-week pretreatment phase, 52 weeks treatment, then reassigned for further 52 weeks treatment, contacted 25 times (baseline, every 2 weeks until week 12, then every month until month 12, then 8 visits in year 2) **Description of intervention**: a + b: 4-week pretreatment consisting of single-blind placebo 3 times daily with meals and 600 kcal/day deficit with 30% calorie intake from fats; first 24 weeks all participants continued 600 kcal/day deficit (min. 1200 kcal/day) then until week 52 reduced by additional 300 kcal/day (min. 1000 kcal/day); diet designed to cause weight loss of 0.25–0.5 kg/week and consisted of 30% calorie intake from fats, 50% CHO, 20% protein, 300 mg/day cholesterol, 3 main meals and optional snack daily, 150 mg/week alcohol; year 2 all participants advised on weight maintenance diet and not to return to hypocaloric diet; additional dietary counselling or vitamin supplements given when necessary if 2 consecutive measures were below normal range a: orlistat 120 mg 3 times daily baseline to week 104 b: placebo 3 times daily baseline to week 104 **Allocated**: a: 345, b: 343 at baseline; a: 135, b: 126 at end week 52 **Completed**: a: 284, b: 260 at 52 weeks; a: 114, b: 102 at week 104 **% Dropout**: a: 18%, b: 24% at 52 weeks; a: 16%, b: 19% at week 104 **Assessed**: a: 343, b: 340 at 52 weeks ('ITT', LOCF); a: 133, b: 123 at 104 weeks ('ITT', LOCF)	**Length of follow-up**: 2 years **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose, adverse events	Mean change in weight and risk factor data calculated from actual values, SDs calculated, assumed mean weight loss in 4 week run-in = 2.2 kg **Sponsorship**: F Hoffman-La Roche

[a] See Appendix 5.
OGTT, oral glucose tolerance test; HRT, hormone replacement therapy; CHO, carbohydrate; QoL, quality of life.

TABLE 19 *Included sibutramine studies*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Apfelbaum, 1999	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 12 medical centres in France with interest in obesity/endocrine disorders **Period of study**: before February 1998 **Inclusion criteria**: either gender, 18–55 years, BMI > 30 kg/m^2, weight loss of ≥ 6 kg during 4-week VLCD (220–800 kcal/day) run-in phase **Exclusion criteria**: endocrine-related obesity, type 1 diabetes, type 2 diabetes receiving insulin or fasting glycaemia > 7.8 mmol/l, supine DBP > 100 mmHg, medical illness, ECG or laboratory abnormalities disqualified at investigators' discretion, unsuccessful VLCD in previous 6 months, not more than borderline depressed on Clinical Global Impression Scale **Gender**: 127 women, 33 men **Age** (years): mean (SD) a: 36.3 (9.5), b: 39.1 (9.1) **BMI** (kg/m^2): mean (SD) a: 35.9 (6.6), b: 35.1 (5.8) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 16 times (baseline, at week 2, month 1, monthly to month 12, then at month 13 and month 15) **Description of intervention**: a + b: 1-week run-in phase for screening tests then 4 week pretreatment phase of VLCD (220–800 kcal/day, site specific); dietary counselling to reduce total calorie intake by 20–30% compared with pre-VLCD intake a: 10 mg sibutramine capsule each morning b: placebo capsule each morning **Allocated**: a: 82, b: 78 **Completed**: a: 60, b: 48 at 12 months **% Dropout**: a: 39%, b: 27% at 12 months **Assessed**: a: 54, b: 45 at 12 months (completer analysis, 6 participants in group a, 3 participants in group b excluded as 12-month assessment performed more than 6 days after last dose of trial medication) a: 81, b: 78 at 12 months ('ITT', LOCF; 1 participant in group a excluded as did not provide a postbaseline assessment of body weight)	**Length of follow-up**: 15 months **Outcomes**: weight data, LDL cholesterol, HDL cholesterol, TGs, adverse events, compliance	**Sponsorship**: none mentioned, reprints from author at Laboratoires Knoll, France
McMahon, 2000	**Randomisation**: 2:1, no other details given. Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 13 sites, USA **Period of study**: before February 2000 **Inclusion criteria**: either gender, ≥ 18 years, BMI 27–40 kg/m^2, diagnosis of hypertension ≥ 12 months, adequate medical control of hypertension (mean supine DBP ≤ 95 mmHg during run-in period; variations in mean DBP measured at 3 consecutive run-in visits and variations in individual measurements during each of these qualifying run-in visits had to be within 10 mmHg); hypertension to be controlled using a constant dose of a calcium	**Timing of active intervention**: a + b: 12 months, contacted 16 times (baseline, every 2 weeks, weeks 0–8, then every 4 weeks, weeks 9–52) **Description of intervention**: a + b: 2–10-week pretreatment phase, brief general dietary counselling for weight reduction at initial run-in visit only a: sibutramine titrated 5–20 mg/day in 5-mg increments every 2 weeks to week 6, then maintained at 20 mg/day weeks 8–52 b: placebo once daily	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, adverse events, QoL	SDs calculated for change in weight and risk factors at 1 year **Sponsorship**: Knoll Pharmaceutical Co.

continued

TABLE 19 *Included sibutramine studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
		channel blocker ≥ 60 days preceding screening and during run-in period; use of a single thiazide diuretic in addition was allowed provided dose stable during same period; concomitant therapy with a single antilipidaemic agent, diuretic or β-adrenergic receptor agonist was allowed if dose stable ≥ 60 days preceding screening; women patients ≥ 2 years postmenopausal, had undergone surgical sterilisation or were using adequate contraceptive measures; ≥ 75% compliance (tablet count) during placebo run-in period **Exclusion criteria**: elevated BP secondary to concurrent medical condition (other than obesity); supine pulse rate > 95 beats/minute at baseline or supine DBP ≥ 95 mmHg at any run-in visit, history of significant cardiac disease, endocrine abnormalities, impairment of a major organ system, convulsions, severe cerebral trauma or stroke, hypersensitivity to ≥ 2 classes of drugs, adverse reactions to CNS stimulants, substance abuse < 2 years before screening, gastric surgery to reduce weight or participation in a formal weight loss programme within 3 months before screening, previous administration of sibutramine at any time or use of another investigation drug within 30 days before this study, concomitant therapy with other weight loss products **Gender**: 136 women, 88 men **Age** (years): mean (SD) a: 52.3 (10.0), b: 52.9 (8.7) **BMI** (kg/m^2): mean (SD) a: 34.5 (3.4), b: 34 (4.0) **Baseline comparability**: yes	**Allocated**: a: 150, b: 74 **Completed**: a: 79, b: 41 **Assessed**: a: 79, b: 41 at 12 months (completer analysis); a: 142, b: 69 at 12 months ('ITT' LOCF) **% Dropout**: a: 47%, b: 45% at 12 months		

continued

TABLE 19 *Included sibutramine studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Smith, 2001 Smith, 2001a: 10 mg sibutramine Smith, 2001b: 15 mg sibutramine	**Randomisation**: computer-generated randomisation list. Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 12 GP centres in UK **Period of study**: before 1996 **Inclusion criteria**: either gender, BMI 27–40 kg/m^2, protocol amended to BMI 25–44 kg/m^2, 18–65 years, not lost > 3 kg in previous 3 months, seated pulse rate of ≤ 100 beats/minute, seated DBP of ≤ 100 mmHg, hypertensives if stabilised with medication for 6 months, ability to follow dietary advice during 2-week single-blind run-in period assessed by 10-cm visual analogue question scale **Exclusion criteria**: obesity of endocrine origin, diabetes mellitus, people taking laxatives, anorectic agents, diuretics (except where stabilised for ≥ 6 months), bulking agents, antidepressants or any other medication that may alter body weight, more than borderline depression assessed by Clinical Global Impressions questionnaire and Beck Depression Inventory **Gender**: 390 women, 95 men **Age** (years): 41.8 **BMI** (kg/m^2): mean (SD) a: 32.9 (4.1), b: 32.7 (3.3), c: 32.4 (3.5) **Baseline comparability**: yes	**Timing of active intervention**: a + b + c: 2-week single-blind placebo run-in period, 12 months with follow-up to 13 months, contacted 15 times (baseline, monthly to month 12, then 1 week post-treatment and 1 month post-treatment) **Description of intervention**: a + b + c: all participants given standardised dietary advice including diet sheets and advised to include 12 oz (340 g) vegetables and fresh fruit, 6 oz (170 g) bread, cereals, potatoes or rice, 10 oz (250 g) skimmed milk each day; told to substitute fried foods with low-calorie foods, a: 10 mg sibutramine once daily in the morning b: 15 mg sibutramine once daily in the morning c: placebo once daily in the morning **Allocated**: a: 161, b: 161, c: 163 **Completed**: a: 94, b: 82, c: 80 at 12 months **% Dropout**: a: 42%, b: 49%, c: 51% at 12 months **Assessed**: a: 154, b: 153, c: 157, at 12 months (for weight data, denominators varied for other outcomes)	**Length of follow-up**: 13 months **Outcomes**: weight data, total cholesterol, TGs, SBP, DBP, fasting plasma glucose, adverse events	SDs calculated, weight loss figures in abstracts do not agree with main trial report, presumed BP changes are actual values rather than percentages **Sponsorship**: Knoll Pharmaceuticals

continued

TABLE 19 *Included sibutramine studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
STORM, 2000	**Randomisation**: 3:1, computer-generated list maintained centrally. Allocation concealment: A **Assessor blinding**: no details given **ITT**: yes for weight outcome only	**Location**: 8 European specialist centres **Period of study**: before December 2000 **Inclusion criteria**: either gender, 17–65 years, BMI 30–45 kg/m^2, lost 5% or more initial weight in 6-month open weight reduction phase with < 2 kg weight gain between months 4 and 5 or months 5 and 6, women of childbearing potential if using adequate contraception, hypertensive patients stabilised on therapy **Exclusion criteria**: endocrine-related obesity, recent weight changes (loss or gain > 4 kg in past 3 months), specified disease, e.g. myxoedema, Cushing's syndrome, diabetes mellitus, significant neurological or psychological illness such as epilepsy, schizophrenia or depression, or eating disorder such as bulimia, severe somatic disease, hepatic or renal dysfunction, a history of heart failure, ischaemic heart disease, stroke, transient ischaemic attacks or unstable hypertension (persistent DBP > 95 mmHg or pulse rate > 100 beats/minute), those with significant abnormalities on ECG, patients on such drugs as anorectics, oral β-blockers, agonists such as those used for treating asthma, steroids, thyroid preparations or diuretics for non-hypertensive purposes **Gender**: 390 women, 77 men **Age** (years): mean (SD) 40.6 (10.1) **BMI** (kg/m^2): mean (SD) 36.6 (4.1) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 18 months, contacted 19 times (baseline then monthly) **Description of intervention**: a + b: 6-month open pretreatment weight reduction phase consisting of 10 mg sibutramine daily plus 600 kcal/day deficit plus 30 minutes' daily extra walking plus advice on behaviour modification a: 10 mg sibutramine daily b: placebo daily a + b: sibutramine (or placebo) increased to 15 mg if > 1 kg weight regain occurred after pretreatment phase or since last dose increase providing dose stable for minimum of 2 months, if further weight increases dose increased to maximum 20 mg daily, dose reduced by 5 mg each time if patient could not tolerate higher dose, activity and behavioural advice, 600 kcal/day deficit (EE=RMRXPAL) consisting of 45–50% CHO, 30% fat, 15–20% protein **Allocated**: a: 352, b: 115 **Completed**: a: 206, b: 57 **% Dropout**: a: 59%, b: 50% **Assessed**: a: 222, b: 62 at 12 months for cholesterol, TGs, HbA_{1c} and fasting plasma glucose; a: 350, b: 114 at 12 months for weight data (ITT, LOCF)	**Length of follow-up**: 18 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, HbA_{1c}, fasting plasma glucose, adverse events, compliance	Mean change in risk factor outcomes at 12 and 18 months postrandomisation calculated from actual values at time-points, SDs also calculated **Sponsorship**: BASF Pharma part funded

BP, blood pressure; ECG, electrocardogram; EE=RMRXPAL, energy expenditure = testing metabolic rate × physical activity level.

TABLE 20 *Included SSRI studies*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Bitsch, 1987	**Randomisation**: predetermined randomisation list. Allocation concealment: A **Assessor blinding**: yes **ITT**: yes	**Location**: 12 GPs with practices in southern Sjaelland, Denmark **Period of study**: before July 1986 **Inclusion criteria**: either gender, 20–75 years, obese for 1 year (20% above IBW) **Exclusion criteria**: diuretics initiated during previous 1 month or anorectics in previous 6 months; pregnant, women of childbearing age if not on pill or using intrauterine device, severe hepatic, renal or somatic diseases **Gender**: 43 women, 10 men (completers only) **Age** (years): mean 47.9, range 24–68 (completers only) **BMI** (kg/m^2): not stated (nor weight) **Baseline comparability**: yes (completers only)	**Timing of active intervention**: a + b: 16 weeks, contacted 10 times (baseline, every 2 weeks for initial 16 weeks, then at 12 months) **Description of intervention**: a + b: 1200–1600 kcal/day and written dietary instruction a: 200 mg femoxetine twice daily days 1–7, increased to 300 mg twice daily thereafter, reduced to 200 mg twice daily if clinically significant side-effects b: placebo twice daily **Allocated**: a: 36, b: 37 **Completed**: 34 **% Dropout**: 53% overall at 12 months **Assessed**: 37 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data adverse events, compliance	Baseline characteristics for all participants, excluded participants, denominators at 1 year, mean and SD for weight in each group at 1 year unclear **Sponsorship**: none mentioned, one author at Ferrosan Research Division
Breum, 1995	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: multicentred, Denmark **Period of study**: before November 1994 **Inclusion criteria**: either gender, ≥ 18 years, BMI ≥ 29 kg/m^2, fasting venous plasma glucose ≥ 7.8 mmol/l, or 2 separate plasma glucose tests ≥ 7.8 mmol/l 2 hours after oral 75 g glucose load and HbA_{1c} < 14% **Exclusion criteria**: obesity due to endocrine disorders, severe somatic or psychiatric disorder including alcohol or drug abuse, MAOIs or cyclic antidepressants in previous 2 weeks, anorectics, lactation, pregnancy including desire to become pregnant, weight loss in previous 2 months, antihypertensives, guanethidine, reserpine, clonidine, methyldopa, severe diabetic complications **Gender**: 28 women, 12 men **Age** (years): mean (SD) a: 43.6 (9.8), b: 44.3 (8.7) **BMI** (kg/m^2): mean (SD) a: 36.9 (4.5), b: 39.5 (4.7) **Baseline comparability**: glucose and HbA_{1c} levels were higher in the fluoxetine group (non-significant)	**Timing of active intervention**: a + b: 12 months, contacted 13 times (baseline, every 4 weeks) **Description of intervention**: a + b: 1194 kcal/day with at least 50% CHO, behaviour modification a: 60 mg fluoxetine daily b: placebo daily **Allocated**: a: 20, b: 20 **Completed**: a: 15, b: 14 **% Dropout**: a: 25%, b: 30% at 12 months **Assessed**: a: 15, b: 14 at 12 months (2 participants excluded due to adverse events)	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, SBP, DBP, HbA_{1c}, fasting plasma glucose, adverse events, compliance	Presumed outcome data are for completers in each treatment group as unclear. Mean change in all outcomes (except for weight and fasting plasma glucose) calculated from actual values at baseline and at 12 months, SDs calculated **Sponsorship**: Eli Lilly & Co.

continued

TABLE 20 *Included SSRI studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Goldstein, 1994	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: yes **ITT**: no	**Location**: multicentre, 10 sites in USA **Period of study**: before August 1992 **Inclusion criteria**: either gender, > 18 years, BMI ≥ 25 kg/m^2, must avoid pregnancy **Exclusion criteria**: pregnancy/lactating, appetite suppressants within past 2 weeks **Gender**: 366 women, 92 men **Age** (years): mean (SD) a: 43 (12), b: 43 (12) **BMI** (kg/m^2): mean (SD) a: 36.2 (6.5), b: 35.8 (6.7) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 12 times (baseline, biweekly weeks 0–8, monthly weeks 9–20, every 2 months weeks 21–52) **Description of intervention**: a + b: participants given individual diets aimed to produce weight loss of 0.45 kg/week, nutrition, behavioural counselling and walking programme a: 60 mg fluoxetine once daily b: placebo once daily **Allocated**: a: 230, b: 228 **Completed**: a: 99, b: 108 at 12 months **% Dropout**: a: 57%, b: 53% at 12 months **Assessed**: a: 99, b: 108 at 12 months (completers, a: excludes 6 participants who discontinued at final visit but had final weight measurement, b: includes 1 participant who did not have weight measurement at final visit) a: 230, b: 228 at 12 months (ITT, LOCF, presumed no participants failed to return for 1 postbaseline visit)	**Length of follow-up**: 12 months **Outcomes**: weight data, adverse events, compliance	**Sponsorship**: Eli Lilly and Co.
O'Kane, 1994	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: diabetic clinic at Leeds General Infirmary, UK **Period of study**: before July 1993 **Inclusion criteria**: either gender, BMI >30 kg/m^2, no significant change in weight in prior 3 months, diagnosed with type 2 diabetes for ≥ 1 year and had been prescribed weight reducing diets as part of therapy, measurable fasting serum C peptide levels **Exclusion criteria**: clinical depression/antidepressant therapy **Gender**: 13 women, 6 men **Age** (years): mean (range) a: 59.6 (51–71), b: 54.9 (23–72) **BMI** (kg/m^2): mean (range) a: 36.8 (30.7–53.0), b: 35.8 (30.1–43.2) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 14 times (baseline, every 4 weeks) **Description of intervention**: a + b: prescribed weight reducing diets a: 60 mg fluoxetine daily b: placebo daily **Allocated**: a: 10, b: 10 **Completed**: a: 7, b: 9 at 12 months **% Dropout**: a: 30%, b: 10% at 12 months **Assessed**: a: 7, b: 9 at 12 months, 1 subject excluded from fluoxetine group (a) within first month as did not fulfil entry criteria	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, TGs, HbA_{1c}, fasting plasma glucose, adverse events	Weight and risk factor outcomes presented as median and IQRs, median assumed similar to mean and SDs calculated from IQRs **Sponsorship**: Lilly Industries

continued

TABLE 20 *Included SSRI studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wadden, 1995	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: yes	**Location**: University of Pennsylvania School of Medicine, Philadelphia, USA **Period of study**: before December 1994 **Inclusion criteria**: women who had completed a 26-week VLCD and behaviour therapy programme and had lost ≥ 10% of initial weight then completed a medical evaluation **Exclusion criteria**: medications affecting weight, appetite or energy expenditure, abnormal renal or hepatic function, severe psychiatric illness **Gender**: 53 women **Age** (years): mean (SD) a: 41.7 (10.9), b: 42.4 (8.6) **BMI** (kg/m^2): mean (SD) a: 29.2 (4.3), b: 30.7 (6.1) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 54 weeks, contacted 29 times (baseline, weekly for first 4 weeks, then fortnightly to week 54) **Description of intervention**: a + b: 26-week pretreatment phase of VLCD of 420/660/800 kcal/day plus behavioural therapy, then 1500–1800 kcal/day diet, ≤ 30% fat, exercise 3–4 times/week for 20–30 minutes of walking/aerobic activity, identifying and coping with high-risk situations, developing supportive relationships, identifying maximum acceptable weight, learning to reverse small weight gains a: 50–200 mg daily sertraline titrated in first 3 weeks then maintained to week 54 b: placebo daily **Allocated**: a: 26, b: 27 **Completed**: a: 13, b: 17 at 12 months **% Dropout**: a: 50%, b: 63% at 12 months **Assessed**: a: 13, b: 17 at 12 months	**Length of follow-up**: 54 weeks **Outcomes**: weight data, adverse events	**Sponsorship**: Pfizer Central Research, National Institute of Mental Health

MAOI, monoamine oxidase inhibitor.

TABLE 21 *Included metformin studies*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
BIGPRO 1, 1991	**Randomisation**: double-blind, confidential balanced random lists used to allocate to every participant's number metformin or placebo. Allocation concealment: A **Assessor blinding**: no details given **ITT**: yes	**Location**: multicentre, hospital outpatient clinics in university hospitals in France **Period of study**: before December 1995 **Inclusion criteria**: either gender, women 40–60 years, men 35–60 years with high waist–hip ratio (women = 0.8, men = 0.95) **Exclusion criteria**: ischaemic heart disease (or ECG abnormal on admission), diabetes (or diagnosed by WHO criteria on OGTT), serious chronic medical treatment, serious life-threatening medical conditions, chronic treatment by drug containing metformin or a lipid-lowering drug, psychiatric disorders, impaired renal function (plasma creatinine > 130 μmol/l) **Gender**: 306 women, 151 men **Age** (years): median (range) 49 (36–65) **BMI** (kg/m^2): geometric mean (95% tolerance limit) a: 33.3 (24.6–45.1), b: 33.0.(24–45.4) **Baseline comparability**: (available for completers only) 29% family history of diabetes in placebo group compared with 19% in metformin-treated group	**Timing of active intervention**: 12 months, contacted 5 times (every 3 months) **Description of intervention**: a + b: diet and encouragement to take regular moderate physical activity to reduce insulin resistance a: 850 mg metformin twice daily b: placebo twice daily **Allocated**: a: 227, b: 230 **Completed**: a: 164, b: 160 **% Dropout**: a: 28%, b: 31% at 12 months **Assessed**: a: 164, b: 160 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose deaths, new diabetes, morbidity, adverse events, compliance	SDs calculated from CIs **Sponsorship**: LIPHA Pharmaceutical Co., National Institute of Health and Medical Research, National Health Insurance for Wage Earners

continued

TABLE 21 *Included metformin studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Teupe, 1991	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: diabetes clinic, Bad Mergentheim, Germany **Period of study**: before 1991 **Inclusion criteria**: either gender, type 2 diabetes with plasma glucose levels not normalised (fasting 6.67–10.0 mmol/l, early postprandial 10.0–13.9 mmol/l) during 2 weeks' inpatient care with intensive diet treatment (participants also belonged to an overweight group receiving behavioural therapy at time of randomisation) **Exclusion criteria**: >70 years, creatinine >1.2 mg/100 ml, liver cirrhosis, ischaemic or wasting disease, acute severe diseases **Gender**: 60 women, 40 men **Age** (years): mean (SD) a: 51.5 (10.1), b: 56 (7.6) (at hospital entry, 14 days before randomisation) **BMI** (kg/m^2): mean a: 31.57, b: 30.51 (at hospital entry, 14 days before randomisation) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 2 years, contacted minimum 19 times (baseline, week 6 and week 20, every 3 months until 2 years) **Description of intervention**: a + b: all participants received 14 days' inpatient hospital treatment consisting of a strong dietary regimen before randomisation; postrandomisation all participants given individually adapted written diet plans, daily calorie reduction of ≥ 300 kcal, 50% intake from CHO, 6 meals daily; behavioural group leader (psychologist) contacted participants by letter and telephone at weeks 6 and 20; participants received telephone counselling every 3 months and asked to submit blood sample for HbA_{1c} (if > 10% rechecked after 4 weeks, if still elevated then participant hospitalised for 5 days to check whether reason was non-compliance or failure of therapy); participants hospitalised at 1 year and at 2 years for 2-day assessment b: received maximum 1.7 g metformin daily from baseline to 2 years **Allocated**: a: 50, b: 50 **Completed**: a: 33, b: 39 at 1 year; a: 25, b: 29 at 2 years **% Dropout**: a: 50%, b: 42% at 2 years **Assessed**: a: 29, b: 25 at years 1 and 2 (all participants with metabolic failures excluded from analyses)	**Length of follow-up**: 2 years **Outcomes**: weight data, total cholesterol, TGs, HbA_{1c}, MI, musculoskeletal adverse events, compliance	Change calculated from actual values, SDs calculated **Sponsorship**: none mentioned

continued

TABLE 21 *Included metformin studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
UKPDS, 1998	**Randomisation**: computer-generated, allocations in sealed opaque envelopes, check maintained on numerical sequence, dates of opening and results. Allocation concealment: A **Assessor blinding**: no details given **ITT**: possibly	**Location**: multicentre, UK **Period of study**: 1977 onwards **Inclusion criteria**: either gender, 25–65 years, newly diagnosed diabetes, 3 fasting plasma glucose levels mean value > 6 and < 15 mmol/l, if later mean of 3 consecutive 3-monthly fasting plasma glucose > 6 mmol/l were randomised too; ≥ 120% above IBW (Metropolitan Life Insurance tables) **Exclusion criteria**: ketonuria > 3 mmol/l, MI in previous year, current angina or heart failure, > 1 major vascular episode, serum creatinine > 175 μmol/l, severe retinopathy requiring photocoagulation, malignant increase in BP, uncorrected endocrine abnormality, occupation not allowing insulin, severe concurrent illness requiring extensive systemic treatment, inadequate comprehension **Gender**: 403 women, 350 men **Age** (years): mean (SD) a: 53 (8), b: 53 (9) **BMI** (kg/m^2): mean (SD) a: 31.6 (4.8), b: 31.8 (4.9) **Baseline comparability**: yes	**Timing of active intervention**: a + b: median 10.7 years, contacted median 44 times (baseline then 3 monthly or more frequently) **Description of intervention**: a + b: all participants received advice regarding prudent diet, 50% CHO, low saturated fat, moderate–high fibre, reduced energy if obese and aiming for IBW a: maximum 1700 mg metformin at breakfast, 850 mg at evening meal with aim to get fasting plasma glucose < 15 mmol/l, if fasting plasma glucose > 15 mmol/l the sulfonylurea added then insulin added if control still inadequate **Allocated**: a: 342, b: 411 **Completed**: a: 279, b: 309 at 5 years; a: 181, b: 200 at 10 years; a: 21, b: 22 at 15 years **% Dropout**: a: 18%, b: 25% at 5 years; a: 47%, b: 51% at 10 years; a: 94%, b: 95% at 15 years **Assessed**: a: 279, b: 309 at 5 years; a: 181, b: 200 at 10 years; a: 21, b: 22 at 15 years	**Length of follow-up**: 15 years **Outcomes**: total mortality, deaths from CVD, deaths from stroke, deaths from cancer, adverse events, HbA_{1c}, fasting plasma glucose, weight data	Report of diet and metformin arms only of UKPDS **Major sponsorship**: UK Medical Research Council, British Diabetic Association, UK Department of Health, National Eye Institute, National Institute of Digestive, Diabetes and Kidney Disease in National Institutes of Health, USA, British Heart Foundation, Novo-Nordisk, Bayer, Bristol Myers Squibb, Hoechst, Lilly, Lipha, Farmitalia Carlo Erba

TABLE 22 *Included acarbose studies*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Chiasson, 1994	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: 7 hospitals in Canada **Period of study**: before 1994 **Inclusion criteria**: either gender, ≥ 18 years, BMI <40 (stable for 3 months), NIDDM = 6 months, HbA_{1c} > 7% or > 6.5% (diabetics on diet alone), normal plasma creatinine and liver function tests, hypertensives if blood pressure well controlled by antihypertensive medication **Exclusion criteria**: gastrointestinal disease and/or medications likely to alter gut motility or absorption, lactose intolerance, lipid-lowering agents, glucocorticoids, any debilitating disease, thiazide diuretics or β-blockers for hypertension **Gender**: 143 women, 211 men **Age** (years): mean (SD) 57.4 (9.4) **Weight** (kg): mean (SEM) a: 84.5 (1.5) n = 130, b: 81.1 (1.3) n = 149 **Baseline comparability**: yes	**Timing of active intervention**: 12 months, contacted 5 times (every 3 months) **Description of intervention**: a + b: 6 week pretreatment phase of placebo and weight maintaining diet a: 50 mg acarbose 3 times daily taken with first bite of each meal, titrated to 100 mg, then 200 mg 3 times daily during first 6 months to achieve target 60-minutes postbreakfast plasma glucose level < 12 mmol/l, dose increased if postprandial plasma glucose > 10 mmol/l b: placebo 3 times daily **Allocated**: a: 172, b: 182 **Completed**: a: 125, b: 143 **% Dropout**: a: 27%, b: 23% at 12 months **Assessed**: a: 149, b: 167 at 12 months (participants excluded if dropped out or required increase in concomitant hypoglycaemic medication in first 60 days)	**Length of follow-up**: 12 months **Outcomes**: Weight data, HbA_{1c}, fasting plasma glucose, adverse events	Data for fasting plasma glucose and HbA_{1c} only presented for subgroups: diet alone (BMI 28.8 kg/m^2), metformin (BMI 29.4 kg/m^2), sulfonylurea (BMI 27.8 kg/m^2), insulin (BMI 30.2 kg/m^2) **Sponsorship**: Miles Canada

continued

TABLE 23 *Included non-drug studies*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Black, 1984	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Omaha and Oklahoma, USA **Period of study**: before November 1983 **Inclusion criteria**: women, married, ≥ 10% overweight, husband signed statement if requested to attend, $11 deposit refunded on attendance **Exclusion criteria**: physiological or medical problems that would inhibit weight loss **Gender**: 36 women **Age** (years): mean: 35.1 overall **Weight** (kg): 77.3 overall **Baseline comparability**: yes	**Timing of active intervention**: a + b + c: 10 weeks with follow-up to 4 years, contacted 14 times (90-minute introductory baseline visit, then 10 weekly visits of 30–90 minutes' duration, then at 1, 3 and 4 years post-treatment (218 weeks in total) **Description of intervention**: a + b + c: all participants received 90-minute introductory meeting and signed contract to complete daily food record and record of non-routine physical activity for 2 weeks, 4 behavioural contracts written during 10 weeks focusing on changing eating and exercise habits a: participants attended alone, counsellor negotiated and co-signed contracts b: husbands attended as passive observers not encouraged to help their wives, counsellor negotiated and co-signed contracts c: husbands attended and actively participated in sessions, and contracts specified ways husband could help their wives, spouse negotiated and co-signed contracts **Allocated**: a: 12, b: 12, c: 12 **Completed**: a: 11, b: 10, c: 11 at 62 weeks **% Dropout**: a: 8%, b: 17%, c: 8% at 62 weeks **Assessed**: a: 11, b: 10, c: 11 at 62 weeks	**Length of follow-up**: 4 years **Outcome**: weight data	**Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Blonk, 1994	**Randomisation**: stratified by gender, no further details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Amsterdam, The Netherlands **Period of study**: before December 1993 **Inclusion criteria**: Either gender, type 2 diabetes (WHO), normal haematological, liver, kidney, thyroid function, BMI > 27 kg/m^2 **Exclusion criteria**: history of angina, heart failure, intermittent claudication, proliferative retinopathy, subcutaneous insulin injections, diuretics, β-blocking agents, drugs for hyperlipidaemia and any other drugs that may influence CHO metabolism, regular physical exercise training **Gender**: 40 women, 20 men **Age** (years): median (range) a: 59 (42–69) $n = 27$, b: 58.5 (29–70) $n = 26$ **BMI** (kg/m^2): median (range) a: 31.3 (27.2–44.3) $n = 27$, b: 32.8 (27.9–45.8) $n = 26$ **Baseline comparability**: yes	**Timing of active intervention**: a: 24 months, contacted 56 times (baseline then 2-monthly dietitian visit, behavioural therapy sessions once a week for first 2 months, then at 4, 8, 12, 16 and 20 weeks, exercise sessions twice a month during months 3–6 and once a week during months 9–12 and 15–18) b: 24 months, contacted 13 times (baseline then every 2 months) **Description of intervention**: a + b: all participants underwent 3-month run-in before randomisation, seen 3 times for measurements and twice by dietitian who assessed 3-day food records, all participants instructed not to change their dietary habits; postrandomisation all participants received dietary education counselling programme involving visits to the dietitian every 2 months, 500 kcal/day deficit (minimum 1000 kcal/day), 50–55% CHO, 15% protein, 30% fat (emphasising unsaturated fat), 25 g fibre and < 300 mg cholesterol/day; adherence assessed at each visit by dietary record a: participants additionally received behavioural modification strategies including self-monitoring, stimulus control, self-reinforcement, cognitive restructuring and relapse prevention training; participants also received exercise training of 30 minutes of bicycle ergometer at 60–80% maximum heart rate and then 30 minutes of various sports activities **Allocated**: a: 30, b: 30 **Completed**: a: 27, b: 26 at 24 months **% Dropout**: a: 10%, b: 13% at 24 months **Assessed**: a: 27, b: 26 at 24 months	**Length of follow-up**: 24 months **Outcomes**: weight data, total cholesterol, TGs, SBP, DBP, HbA_{1c}, adverse events	Author confirmed study participants were randomly allocated to treatment groups; median change in weight at 12, 18 and 24 months derived from graphs assumed similar to mean, SDs calculated **Sponsorship**: Dutch Diabetes Research Foundation

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Cohen, 1991	**Randomisation**: stratified by residency year and randomly assigned, group status of participant determined by status of physician, cluster randomised. Allocation concealment: B(I) **Assessor blinding**: no details **ITT**: possibly	**Location**: Lawrenceville Family Health Centre, Pittsburgh, USA **Period of study**: January 1987–1989 **Inclusion criteria**: either gender, 20–75 years, BMI ≥ 27.8 kg/m^2 for men and ≥ 27.3 kg/m^2 for women, average SBP ≥ 140 mmHg on ≥ 2 readings, or average DBP > 90 mmHg on ≥ 2 readings **Exclusion criteria**: not stated **Gender**: 22 women, 8 men **Age** (years): mean: a: 59.3, b: 59.7 **BMI** (kg/m^2): mean: a: 34.2, b: 34.0 **Baseline comparability**: yes	**Timing of active intervention**: a: 12 months, contacted 13 times (baseline then monthly) b: assessed 3 times (baseline, 6 and 12 months) **Description of intervention**: a: physicians received special instruction and materials in weight reduction methods; reviewed diet of participant using questionnaire and suggested dietary changes, gave participant diet history sheet, information and advice sheet; advised participants to reduce calorie content of diet and set short-term goals; used methods of encouragement such as reinforcement, each month reviewed participant's previous day's food intake b: participants received usual care, physicians free to refer patients for dietary advice or provide advice themselves, but did not receive any special weight reduction instructions or materials **Allocated**: a: 15, b: 15 **Completed**: a: 15, b: 15 at 12 months **% Dropout**: a: 0%, b: 0% at 12 months **Assessed**: a: 15, b: 15 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, change in number of antihypertensive medications	Cluster RCT **Sponsorship**: St Margaret Memorial Hospital

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Cousins, 1992	**Randomisation**: 3 cohorts, 1 each year, stratified by weight, no further details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Baylor College of Medicine, Houston, USA **Period of study**: before 1992 **Inclusion criteria**: self-identified Mexican–American women, 18–45 years, 20–100% above IBW, married with at least 1 preschool-aged child **Exclusion criteria**: hypertension (DBP ≥ 115 mmHg), diabetes (fasting plasma glucose ≥ 140 mg/dl), chronic illness with diet or exercise recommendations different from those in the study **Gender**: 168 women **Age** (years): mean (SD) a: 33.6 (6.4), b: 33.8 (6.1), c: 33.8 (7.0) **BMI** (kg/m^2): mean (SD) a: 31.7 (5.0), b: 30.3 (4.5), c: 31.6 (4.9) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 37 times (baseline then weekly group sessions and 6 monthly sessions for initial 24 weeks, then 6 monthly sessions up to month 12) c: unclear but presume contacted only at baseline and at 12 months **Description of intervention**: a–c: all participants received 'Cuidando el Corazon', a bilingual manual consisting of a low-fat eating plan and behaviour modification strategies; aimed at diet of 1200 kcal (women), 30% fat (10% unsaturated fat), 20% protein, 50% CHO, < 300 mg cholesterol/day, advised regarding moderate sodium intake, cookbook of recipes for fat-modified traditional Mexican foods, behaviour modification strategies such as maintaining weight loss, problem solving and preventing relapse were described in simple terms and manual translated into Spanish a: individualised instruction by bilingual dietitian on nutrition, feedback on food records and behaviour modification techniques, group exercise, food tasting, cooking demonstrations; last 6 months group leaders focused on preventing or minimising relapse and emphasised problem-solving approach to problems of low-fat eating and exercise, where participants could enlist support of the group; taught using techniques specifically for adults with limited literacy skills b: same sessions as group a except that spouses encouraged to attend sessions (separate classes for children); manual modified to include information on partner support and to encourage family changes in eating and exercise behaviours **Allocated**: 168 overall **Completed**: a: 32, b: 27, c: 27 **% Dropout**: 49% overall at 12 months **Assessed**: a: 32, b: 27, c: 27	**Length of follow-up**: 12 months **Outcome**: weight data	Mean change in weight at 12 months calculated from actual values, SDs also calculated **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
de Waard, 1993 de Waard, 1993a: The Netherlands de Waard, 1993b: Poland	**Randomisation**: 3:2 ratio of intervention: control, no further details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: 3 hospitals in The Netherlands and 2 oncological hospitals in Poland **Period of study**: 1987–1990 **Inclusion criteria**: women, had primary treatment for breast cancer, no signs of distant metastases, 50–69 years, postmenopausal (no menses for ≥ 1 year), overweight by ≥ 10 kg (according to Broca's 1st rule, equivalent to BMI of ≥ 27 kg/m^2) **Exclusion criterion**: initially tamoxifen use, but this exclusion criterion was subsequently omitted **Gender**: 58 women (Netherlands) 49 women (Poland) **Age** (years): no details given **BMI** (kg/m^2): minimum mean a1: 29.3 (Netherlands, $n = 30$), b1: 29.5 (Netherlands, $n = 24$), a2: 30.6 (Poland, $n = 29$), b2: 32.2 (Poland, $n = 19$) **Baseline comparability**: control group (b2) in Poland had significantly fewer women with moderate overweight ($p < 0.02$)	**Timing of active intervention**: a1 + b1: 3 years, no further details a2 + b2: 1 year, no further details **Description of intervention**: a1 + a2: participants received dietary advice from a dietitian of 1500 kcal/day (reduced to 1000 kcal/day if insufficient weight loss was noted) and psychological support b1 + b2: no details given **Allocated**: a1: 30, b1: 24, a2: 29, b2: 19 **Completed**: a1: 28, b1: 24, a2: 27, b2: 15 at 1 year; a1: 27, b1: 24 at 1.5 years; a1: 25, b1: 21 at 2 years; a1: 23, b1: 17 at 2.5 years; a1: 18, b1: 15 at 3 years **% Dropout**: a1: 40%, b1: 38% at 3 years; a2: 7%, b2: 21% at 1 year **Assessed**: a:1 28, b1: 24, a2: 27, b2: 15 at 1 year; a1: 27, b1: 24 at 1.5 years; a1: 25, b1: 21 at 2 years; a1: 23, b1: 17 at 2.5 years; a1: 18, b1: 15 at 3 years	**Length of follow-up**: 3 years (The Netherlands), 1 year (Poland) **Outcomes**: weight data, deaths (non-cancer), new breast cancer (other breast), breast cancer recurrence local and distant, new breast cancer in other breast, death from breast cancer	Median weight change calculated from graphs and assumed similar to mean, SDs calculated, data presented as 2 trials (Netherlands data only, Poland data only) because Netherlands started recruiting in 1987 and Poland in 1989 **Sponsorship**: Linthorst-Kattekamp Research Fund

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
DISH, 1985	**Randomisation**: stratified by clinical centre and obesity and randomised before consent, unbalanced randomisation to favour medication cessation groups. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: multicentred, USA **Period of study**: before 1985 **Inclusion criteria**: either gender, no SBP > 180 mmHg in past year, average DBP < 95 mmHg in past year, average of last 2 DBP ≤ 90 mmHg and neither > 95 mmHg **Exclusion criteria**: congestive cardiac failure, ECG evidence of MI, stroke, transient ischaemic attacks, creatinine ≥ 2.5 mg/dl on at least 2 occasions, personal problems, compliance with diet difficult, severe alcoholism, pregnancy, β-blockers for angina, glucocorticoids **Gender**: 116 women, 60 men **Age** (years): mean a: 56.1, b: 57.2 **Weight** (kg): mean (SD) a: 86.0 (17.3), b: 89.8 (17.8) **Baseline comparability**: yes	**Timing of active intervention**: a: 56 weeks, contacted approximately 38 times (baseline then every 2 weeks for initial 16 weeks, then monthly to week 56, plus 8 initial weekly nutritional visits, then monthly to week 56) b: 56 weeks, contacted 20 times (baseline then every 2 weeks for initial 16 weeks, then monthly to week 56) **Description of intervention**: a + b: all participants given standardised stepped withdrawal of antihypertensive medication during weeks 2–8; medication restarted if DBP 95–99 mmHg 3 times in 3 months, 100–104 mmHg twice in a month or 105 mmHg at any time a: dietary intervention began 1–2 weeks postbaseline, aim for desirable weight according to Metropolitan Life Insurance standards by decreasing calories and keeping electrolytes constant, little emphasis on exercise b: participants did not receive any dietary intervention **Allocated**: a: 87, b: 89 **Completed**: a: 67, b: 77 at 56 weeks **% Dropout**: a: 23%, b: 13% at 56 weeks **Assessed**: a: 67, b: 77 at 56 weeks	**Length of follow-up**: 56 weeks **Outcomes**: weight data, antihypertension medication status	Study also included a continue medication control and a no-medication sodium restriction group in obese population **Sponsorship**: National Heart, Lung and Blood Institute, Ayerst Laboratories, Merck Sharp & Dohme, Ciba-Geigy Corp., Boehringer Ingelheim, USV Pharmaceutical Corp., GD Searle & Co.

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
FDPS, 2001	**Randomisation**: stratified by centre, gender and mean 2-hour plasma glucose concentration (7.8–9.4 mmol/l or 9.5–11.0 mmol/l), randomly assigned by study physician with use of randomisation list. Allocation concealment: B(I) **Assessor blinding**: blinding stated **ITT**: no	**Location**: 5 centres in Finland **Period of study**: 1993–2000 **Inclusion criteria**: either gender, 40–65 years, BMI > 25 kg/m^2, IGT (2-hour plasma glucose 7.8–11.0 mmol/l), OGTT 75 g with a non-diabetic fasting glucose concentration (plasma glucose < 7.8 mmol/l), mean value of 2 OGTTs (less strict criteria used in 1% or less of total number of participants) **Exclusion criteria**: previous diagnosis of diabetes mellitus (other than gestational diabetes mellitus), people involved regularly in vigorous exercise programme, participants receiving treatment to lower plasma glucose (other than routine dietary and health advice), chronic disease making 6-year survival improbable, other medical characteristics likely to interfere with study participation, unbalanced clinical conditions, e.g. thyroid and liver disease **Gender**: 350 women, 172 men **Age** (years): mean (SD): 55 (7) **BMI** (kg/m^2): mean (SD) a: 31.3 (4.6), b: 31.0 (4.5) **Baseline comparability**: significant difference between groups regarding SBP (mmHg, SD): 136 (17) control group (b) vs 140 (18) intervention group (a) (p = 0.03)	**Timing of active intervention**: a: 2–6 years, contacted at baseline, at 1–2 weeks, at 5–6 weeks then at 3, 4 and 6 months and every 3 months thereafter b: 2–6 years, contacted at baseline then at annual intervals Mean duration of follow-up was 3.2 years for all participants **Description of intervention**: a: participants informed at start of risk factors for diabetes, 3-day food diary at baseline provided basis for dietary advice in second session, advised to reduce weight to goal of BMI < 25 kg/m^2 but in practice weight targets were 5–10-kg weight loss; advised to consume > 50% CHO, < 10% saturated fat, 20% mono- and polyunsaturated fat or up to 25% if surplus is from monounsaturated fat; < 300 mg/day cholesterol and 1 g protein/kg IBW per day, encouraged to increase fibre intake to 15 g/1000 kcal, encouraged to use low-fat milk products, low-fat meat products, soft margarine and vegetable oil rich in monounsaturated fatty acids (primarily rapeseed oil); energy content re-evaluated if no weight loss at visits, if no weight loss in first 6–12 months and BMI > 30 kg/m^2 a VLCD was considered (6–12-week duration with group meetings every 1–2 weeks); dietary advice individually tailored and person responsible for preparing meals in family invited to attend sessions (if not the participant), advice tailored to participant's educational level, participants individually guided to increase endurance exercise (programme differed between study centres), also where possible there was a supervised progressive individually tailored circuit type	**Length of follow-up**: 2–6 years (mean 3.2 years) **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose, compliance, new diagnoses of diabetes, deaths, cancer	22 participants had VLCD in year 1 and 25 in year 2 of 3–8 weeks' duration and 500–800 kcal/day; before final inclusion criteria decided 4% participants included with 1 abnormal OGTT only, 6% included based on high plasma glucose (≥ 6.4 mmol/l fasting or random sample after a fast of ≥ 4 hours) together with 1 high 2-hour plasma glucose concentration; authors contacted, reply received regarding numbers of participants assessed, changes in blood pressure and lipids, calorie content of VLCD, causes of death and serious adverse events including group allocation **Sponsorship**: Finnish Academy, Ministry of

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
			resistance training twice weekly, encouraged to perform 30 minutes of daily moderate exercise, 3-day food diary kept every 3 months, 24-hour exercise diary kept every 3 months and 12-month physical activity history completed on annual visit along with 2-km walking test b: at baseline participants advised to adjust total energy intake to reduce BMI to below 25 kg/m^2, also < 30% of energy intake from fat, reduce alcohol intake and stop smoking, verbal and written dietary advice, verbal general information regarding health benefits of recreational exercise, additional routine advice at yearly follow-up where 3-day food record assessed and 2-km walking test performed **Allocated**: a: 265, b: 257 **Completed**: a: 256, b: 250 at 1 year; a: 242, b: 240 at 2 years **% Dropout**: a: 8%, b: 6% at 2 years **Assessed**: a: 256, b: 250 at 1 year; a: 242, b: 240 at 2 years (1 participant excluded at 2 years confirmation of diabetes diagnosed at baseline)		Education, Novo Nordisk Foundation, Yrjö Jahnsson Foundation, Finnish Diabetes Research Foundation

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Foreyt, 1993	**Randomisation**: random numbers table, no other details. Allocation concealment: B(II) **Assessor blinding**: no **ITT**: no	**Location**: Houston, USA **Period of study**: before 1993 **Inclusion criteria**: either gender, 25–45 years, ≥ 14 kg overweight (Metropolitan Life Insurance tables), not taking regular exercise, $100 deposit (refunded in increments according to number of sessions attended) **Exclusion criteria**: not stated **Gender**: 80 women, 85 men **Age** (years): not stated **Weight** (kg): mean (SD) a: 93.9 (20.8), b: 97.7 (22.0), c: 97.6 (25.5), d: 99.1 (16.4) **Baseline comparability**: no details given	**Timing of active intervention**: a + b + c: 12 months plus follow-up visit at 2 years, contacted 24 times (baseline, then weekly for 12 weeks, then fortnightly to week 18, then monthly to week 48, then at 2 years) c: waiting list control for 12 weeks only **Description of intervention**: a + c: Help Your Heart Eating Plan consisting of 30% fat, 50% CHO, 20% protein; energy intake adjusted so weight loss was < 1 kg/week, food diaries kept, contracts to reward behaviour change, stress management, stimulus control and goal setting based on Learn behavioural eating programme a: advised to maintain sedentary lifestyle b + c: lectures focused on physical and psychological benefits of exercise, taught a walking programme at an indoor track, graduated exercise with self-monitoring based on heart rate, breathing and effort to 'vigorous' but not 'strenuous' level; exercise increased to goal of 3–5 sessions of 45 minutes/week b: advised to maintain current eating habits **Allocated**: a: 42, b: 43, c: 42 **Completed**: a: 29, b: 30, c: 27 at 12 months; a: 15, b: 25, c: 21 at 2 years **% Dropout**: a: 64%, b: 40%, c: 50% at 2 years (only invited completers back at 2 years) **Assessed**: a: 29, b: 30, c: 27 at 12 months; a: 15, b: 25, c: 21 at 2 years	**Length of follow-up**: 2 years **Outcome**: weight data	Mean change in weight at 1 year calculated from actual values, SDs also calculated at 1 year **Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Frey-Hewitt, 1990	**Randomisation**: randomly assigned within 4 consecutive cohorts of approximately 39 participants each. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Stanford University, California, USA **Period of study**: before November 1989 **Inclusion criteria**: men, 30–59 years, 120–160% IBW, non-smokers, weight stable (±2.27 kg during previous year) **Exclusion criteria**: BP > 160/100, medications known to affect lipids, plasma total cholesterol > 7.76 mmol/l or TGs > 5.65 mmol/l or exercising ≥ 3 times per week **Gender**: 155 men **Weight** (kg): mean (SD) a: 93.63 (9.16), b: 94.14 (8.8), c: 94.99 (10.63) completers only **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 25 times (every 2 weeks) c: 12 months, contact unclear, possibly twice (baseline and at 1 year) **Description of intervention**: a + b + c: energy requirements of all participants were determined by 7-day food records at baseline a: designed to reduce total body fat by about one-third, participants advised to reduce food quantity without changing relative proportions of fat, CHO, protein or alcohol; individual weight loss goals determined by amount of body fat; 300–500 kcal/day deficit to produce 0.3–0.6 kg fat loss per week; received instruction and discussed behavioural strategies for weight loss first 9 months then to stabilise at this new weight for about 2 months b: designed to reduce total body fat by about one-third, participants underwent supervised exercise classes on 3 days/week with 25 minutes of fast walking (2 miles) during first 3 months whilst gradually adding jogging increasing up to 40–50 minutes of continuous jogging and by month 6 participants advised to take additional 2 days/week of unsupervised walking or jogging; work at 65–85% maximum heart rate (equivalent to kcal output of 8–10 kcal/minute); advised not to change kcal intake or quality of diet, estimated decrease in body fat of 2–3 kg first 3 months, 4–5 kg months 3–6 and remainder during months 6–9 c: advised to keep weight stable with no added energy restriction or exercise a + b: monthly activity and 24-hour energy intake monitored, if dieters changed activity or exercisers changed energy intake for more than 3 months they were counselled to return to baseline habits **Allocated**: a: 51, b: 52, c: 52 **Completed**: a: 49, b: 51, c: 49 at 1 year **% Dropout**: a: 4%, b: 2%, c: 6% at 1 year **Assessed**: a: 36, b: 44, c: 41 at 1 year (excluded 28 participants who had incomplete or technically invalid data at baseline and 1 year)	**Length of follow-up**: 1 year **Outcome**: weight data	**Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Hakala, 1989	**Randomisation**: randomly allocated according to gender, age and percentage overweight. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: Rehabilitation Research Centre of the Social Insurance Institute, Turku, Finland **Period of study**: before December 1988 **Inclusion criteria**: either gender, 25–50 years, 30–50% overweight (Finnish Adult Population 1980) **Exclusion criteria**: limiting diseases such as heart disease, essential hypertension, diabetes and other metabolic diseases; medical treatments **Gender**: 72 women, 28 men (completers only) **Age** (years): mean (SD) 38 (10) **BMI** (kg/m^2): mean (SD) 34 (4) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 10 weeks of intensive treatment, with follow-up to 1 year, contacted 16 times (once a week for initial 10 weeks then 5 sessions until end of 1 year) c: no treatment, contacted 3 times (baseline, 6 months and 12 months) **Description of intervention**: a + b + c: all participants asked not to change physical activity and weekly exercise records completed at baseline, 6 and 12 months a + b: participants received principally dietary counselling but also health and psychological counselling, with participants divided into 3 groups of 15 in each treatment group; for initial intensive 10 weeks the principles of each diet taught by simple advice, food preparation examples and demonstrations; included 3 lectures by a physician, psychologist and physiologist; food diaries completed, at start of each group class each participant weighed and diet reviewed individually; participants advised to consume 1200 kcal/day, low in fat and sugar, high in fibre and vegetables, and to use vegetable margarine instead of butter, 5 sessions after the initial 10 weeks were used for motivating and repeating instructions a: lactovegetarian diet consisting of 20–25% protein, 20–25% fat, 55–60% CHO, all low-fat milk products and higher in vegetable content than group b b: mixed diet consisting of 25–30% protein, 25–30% fat, 45–50% CHO, and moderate in meat, fish and eggs c: participants not given any advice, kept 4-day food diaries at baseline, 6 and 12 months **Allocated**: a: 46, b: 46, c: 44 **Completed**: a: 31, b: 37, c: 42 at 1 year **% Dropout**: a: 33%, b: 20%, c: 5% at 1 year **Assessed**: a: 31, b: 37, c: 42 at 1 year (ITT)	**Length of follow-up**: 1 year **Outcomes**: weight data, SBP, DBP (blood pressure outcomes for groups a + b only), compliance	Author provided lipid outcomes **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Hakala, 1993	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: Rehabilitation Research Centre of the Social Insurance Institute, Turku, Finland **Period of study**: before May 1992 **Inclusion criteria**: either gender, 22–54 years, > 50% overweight (Finnish Adult Population 1980), no serious cardiovascular, metabolic or psychiatric disease **Exclusion criteria**: schizophrenia, hypothyroidism, cardiac failure **Gender**: 40 women, 20 men **Age** (years): mean (SD) 41 (8) **BMI** (kg/m^2): mean (SD) 43 (5) **Baseline comparability**: yes	**Timing of active intervention**: a: 2 years, contacted 17 times (baseline, once a month in year 1 and every 4 months in year 2, then at 5 years) b: 2 years, contacted 42 times (initial 2-week inpatient stay then weekly for 6 weeks, every other week for 10 months, then once a month in year 2, then at 5 years) **Description of intervention**: a + b: vitamin supplements recommended if weight loss > 10 kg in first 3 months a: individual counselling group consisting of 20 minutes of individual visits with same physician monthly for first 6 months, advised on weight reduction with 1200 kcal/day diet and physical activity, information given systematically in small portions, participants received information leaflets, counselling paid attention to personal characteristics, family relationships and working situation; after 6 months the sessions concentrated on follow-up of body weight changes and health status until end of year 2 b: 2 week inpatient intensive group counselling treatment in groups of 10, consisting of 15 hours of nutrition counselling, behaviour modification, 15 hours of physical activation and training, 12 hours of occupational therapy and 1 hour of individual nutrition counselling; also included a lecture and examination by a physician; participants provided with 1200 kcal/day diet of 4 low-fat, low-sugar meals/day; nutrition education based on a mixed diet, group sessions after initial 2 weeks consisted of weight, group discussion, advice and motivation; participants also given individual appointments with physician at 4-month intervals **Allocated**: a: 30, b: 30 **Completed**: a: 28, b: 30 at 1 year and at 2 years; a: 25, b: 28 at 5 years **% Dropout**: a: 7%, b: 0% at 1 year and at 2 years; a: 17%, b: 7% at 5 years **Assessed**: a: 28, b: 30 at 1 year and at 2 years: a: 25, b: 28 at 5 years	**Length of follow-up**: 5 years **Outcomes**: weight data, compliance	Author provided weight outcomes by group, as reported by gender in each group **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Hankey, 2001	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: Glasgow Royal Infirmary, Glasgow, UK **Period of study**: before December 2001 **Inclusion criteria**: either gender, 35–75 years, survived acute MI approximately 3 months before the study, participated in cardiac rehabilitation programmes at the 2 study hospitals **Exclusion criteria**: not stated **Gender**: 10 women, 44 men **Age** (years): mean (range) a: 57 (41–72), b: 57 (40–75) **BMI** (kg/m^2): mean a: 28.6 (2.8), b: 30.4 (3.9) **Baseline comparability**: BMI appears different between groups	**Timing of active intervention**: a: 12 weeks with follow-up at 52 weeks b: assessed at baseline, 12 weeks and 52 weeks **Description of intervention**: a + b: all participants received standard cardiac rehabilitation which included 1 group session of 30–60 minutes with a dietitian and 12 practical exercise sessions of approximately 30 minutes each a: 4 × 1 hour sessions of individual dietary counselling during the initial 12 weeks which included weight management advice, 600 kcal/day deficit and following Scottish dietary targets **Allocated**: a: 28, b: 26 **Completed**: a: 25, b: 25 at 52 weeks **% Dropout**: a: 11%, b: 4% at 52 weeks **Assessed**: a: 25, b: 25 at 52 weeks	**Length of follow-up**: 52 weeks **Outcomes**: weight data, deaths	Author provided unpublished report, author provided cause of deaths and group allocation, details refer to subgroup of study population with BMI > 25 kg/m^2, published report weight loss differs **Sponsorship**: Chief Scientist Office of Scottish Executive

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
HOT, 1999	**Randomisation**: block randomised according to 3 main HOT study treatment groups. Allocation concealment: B(l) **Assessor blinding**: no **ITT**: possibly	**Location**: University of Mississippi, USA **Period of study**: before September 1998 **Inclusion criteria**: either gender, > 50 years, baseline DBP > 100 mmHg **Exclusion criterion**: HOT study patients with BMI < 27. **Gender**: 53 women, 49 men **Age** (years): mean (SD) a: 57 (6), b: 59 (7) completers only **BMI** (kg/m^2): mean (SD) a: 34 (6), b: 34 (6) completers only **Baseline comparability**: weight loss group (a) significantly taller ($p = 0.05$)	**Timing of active intervention**: a: 30 months, contacted maximum 24 times (baseline, at 2-4 weeks, twice a month to 3 months then every 3-6 months to 30 months) b: 30 months, contacted 6 times (baseline, 6, 12, 18, 24 and 30 months) **Description of intervention**: a: individuals counselled by weight loss dietitian within 10 days of randomisation, included counselling on food selection and preparation, and establishing weight reduction goals, calorie and fat restriction; counselled again at 2–4 weeks and attended group support sessions twice monthly for first 3 months then every 3–6 months, weight measured at 6-monthly intervals b: participants told by research nurses that they should lose weight but received no formal diet counselling or group support, weight measured only at 6-monthly intervals **Allocated**: a: 55, b: 56 **Completed**: a: 51, b: 51 at 30 months **% Dropout**: a: 7%, b: 9% at 30 months **Assessed**: a: 51, b: 51 at 30 months	**Length of follow-up**: 30 months **Outcomes**: weight data, SBP, DBP, deaths, number of medication steps	Author contacted, reply received regarding change in weight at 12, 18, 24 and 30 months by treatment group, SDs calculated for weight change at all time-points **Sponsorship**: Astra-Merck

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
HPT, 1990	**Randomisation**: stratified by BMI (BMI < 25 kg/m^2 men; BMI < 23 kg/m^2 women; or BMI 25/23–35 kg/m^2 men and women), random allocation in 3 distinct time intervals. Allocation concealment: B(I) **Assessor blinding**: yes **ITT**: yes	**Location**: Universities of Alabama, California, Mississippi and Minnesota, USA **Period of study**: 1983–1989 **Inclusion criteria**: either gender, 25–49 years, BMI < 35 kg/m^2 or $< 150\%$ IBW (Metropolitan Life Insurance tables), DBP ≥ 76 mmHg or < 99 mmHg at first baseline visit and DBP ≤ 89 mmHg at second visit (7–30 days later) **Exclusion criteria**: antihypertensive medications or medication that may affect sodium metabolism, major chronic disease, CVD, BMI 35 kg/m^2 or more, dietary requirements incompatible with dietary counselling regimens, ≥ 21 alcoholic beverages/week, perceived unable to comply with study **Gender**: 82 women, 169 men **Age** (years): mean a: 38.0, b: 39.5 **BMI** (kg/m^2): mean a: 29.0, b: 28.0 **Baseline comparability**: unequal for genders, 40.5% women in control group (b) vs 24.8% in intervention group (a)	**Timing of active intervention**: a: 3 years, contacted approximately 38 times (assessed 3 times at baseline then at clinic visits other than those of treatment sessions, 6 times at 6-monthly intervals, treatment group sessions weekly for initial 10 weeks, every other week for next 4 weeks, then every other month to 3 years; participants also received periodic individual counselling sessions) b: 3 years, contacted 10 times (assessed 3 times at baseline then at 3, 6, 12, 18, 24, 30 and 36 months) **Description of intervention**: a: calorie restriction dietary counselling where individual goal was for participants to attain IBW and where group goal was to achieve a 5% reduction in mean body weight; participants recommended to include daily servings of low-fat milk and diary products, choose fish, poultry or lean cuts of red meat, decrease use of fats in cooking and at the table, decrease use of high-calorie desserts, snacks and beverages, limit use of alcohol and use more fresh fruit and vegetables; dietary change counselling related to meal planning and rationing, food purchase, label reading; included didactic presentation and demonstrations, token incentives, bimonthly newsletters and telephone calls if participant did not attend group maintenance sessions, daily food records b: participants received no dietary counselling **Allocated**: a: 125, b: 126 **Completed**: a: 117, b: 113 at 3 years **% Dropout**: a: 6%, b: 10% at 3 years **Assessed**: a: 117, b: 113 at 3 years (ITT)	**Length of follow-up**: 3 years **Outcomes**: weight data, SBP, DBP, drug treatment required for hypertension, compliance, deaths	**Sponsorship**: National Heart, Lung, and Blood Institute

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Jalkanen, 1991	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: North Karelia, Finland **Period of study**: before December 1991 **Inclusion criteria**: either gender, 35–59 years, DBP ≥ 95 mmHg, BMI 27–34 kg/m^2, attending hypertension clinic **Exclusion criteria**: not stated **Gender**: 19 women, 21 men **Age** (years): not stated **Weight** (kg): mean (SD) a: 86 (14), b: 80 (11) **Baseline comparability**: weight appears different between groups at baseline	**Timing of active intervention**: a: 12 months, contacted 35 times (baseline then 1.5-hour session weekly for first 6 months, then every 3 weeks for next 6 months) b: contacted 5 times (at baseline then every 3 months for measurements only) **Description of intervention**: a: 1000–1500 kcal/day diet, education on behaviour modification and exercise, choice of food, medical aspects of overweight and CVD risk factors, leaflets on reduction of salt and fat consumption and increase in exercise, 3 exercise sessions with physiotherapist, bicycle trips organised and free tickets for local swimming pool b: usual visit with nurse every 3 months, offered active treatment at end of the study period, received no personal counselling or advice **Allocated**: a: 25, b: 25 **Completed**: a: 24, b: 25 at 12 months **% Dropout**: a: 4%, b: 0% at 12 months **Assessed**: a: 24, b: 25 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, SBP, DBP	Mean change in weight and risk factors at 12 months calculated from actual values, SDs also calculated, data show no change in weight, HDL cholesterol and TGs at 12 months in control group b **Sponsorship**: none mentioned
Jeffery, 1993	**Randomisation**: randomised within centre and gender. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Pittsburgh and University of Minnesota, USA **Period of study**: before July 1992 **Inclusion criteria**: either gender, 25–45 years, 14–32 kg overweight, non-smokers, < 3 alcoholic drinks/day **Exclusion criteria**: special diets, food allergies, unable to exercise, current serious diseases, prescription medications including oral contraceptives **Gender**: not stated **Age** (years): mean a: 37.5,	**Timing of active intervention**: a + b + c + d: 18 months with follow-up at 30 months, contacted 79 times (baseline then weekly group sessions to week 20, then monthly with weekly weigh-ins) e: contacted 5 times (baseline, and 6, 12, 18 and 30 months) **Description of intervention**: a + b + c + d: group behavioural counselling including weigh-in, presentations of information by interventionist, group discussion and a review of progress; participants assigned to an individualised caloric goal of 1000 or 1500 kcal/day on basis of baseline body weight to produce estimated weight loss of 1 kg/week; participants selected a weight loss goal of 14, 18 or 23 kg, if goal reached participants had caloric goals adjusted upwards to a level estimated to maintain this body weight; primary dietary instruction emphasised importance of remaining below	**Length of follow-up**: 30 months **Outcomes**: weight data, compliance	Mean weight change at 12, 18 and 30 months derived from graph, SDs calculated **Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
		b: 38.5, c: 38.1, d: 37.6, e: 35.7 **BMI** (kg/m^2): mean a: 30.9, b: 30.8, c: 31.1, d: 31.1, e: 31.1 **Baseline comparability**: yes	caloric goals, restriction of fat and increased consumption of complex CHO also stressed; participants initially instructed to walk or cycle amount equivalent to 50 kcal/day for 5 days/week, gradually increased to final goal of 1000 kcal/week; daily food records kept for first 20 weeks and for 1 week each month thereafter, which included exercise taken; behavioural techniques included stimulus control, problem-solving strategies, social assertion, short-term goal setting and reinforcement techniques for enhancing motivation, cognitive strategies for replacing negative thinking with more positive statements and constructive self-statements, relapse prevention and social support b: participants given prepackaged meals for 5 breakfasts and 5 dinners each week for 18 months, meals prepared for the calorie level specific to each participant (1000 or 1500 kcal/day); breakfasts primarily consisted of cereal, milk, juice and fruit; dinners typically consisted of lean meat, potato or rice and vegetable; for 1 or 2 days per week a frozen dinner such as Weight Watchers or Lean Cuisine was provided; participants also given meal plans, recipes and recommendations for lunches c: participants received a cash payment each week based on weight lost in relation to their weight loss goal; maximum payment $25/week if weight loss goal reached and maintained, minimum $2.50/week if did not gain weight, weight loss of 50% goal reinforced with $12.50 d: combination of all treatment groups described earlier; behavioural treatment plus food provision plus financial incentives. **Allocated**: a: 40, b: 40, c: 41, d: 41, e: 40 **Completed**: 177 at 30 months **% Dropout**: 13% at 12 months, 15% at 18 months, 24% at 30 months (did not complete all visits) **Assessed**: a: 26, b: 36, c: 35, d: 34, e: 28 at 18 months (participants who attended all 3 follow-ups at 6, 12 and 18 months)		

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Jones, 1986 Jones, 1986c: behaviour therapy given to group Jones, 1986d: behaviour therapy given to individual	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Rochdale, UK **Period of study**: before 1986 **Inclusion criteria**: women, ≥ 18 years, judged suitable by dietitian **Exclusion criteria**: diabetes, pregnancy **Gender**: 160 women **Age** (years): mean (SD) 50.3 (13.5) overall **BMI** (kg/m^2): mean (SD) 35.1 (9.2) overall **Baseline comparability**: not stated	**Timing of active intervention**: a–h: 17 weeks with follow-up 12 months later (69 weeks in total), contacted 7 times (baseline then week 1, then 4 more sessions at 4-week intervals, then 12 months post-treatment) **Description of intervention**: a–h: all participants received individualised dietary advice at first session, recommended 1000 kcal/day below energy requirements but not less than 1000 kcal/day; (treatment was extended beyond 17 weeks if further involvement thought to be warranted) a: 4 group treatment sessions in small groups of 5–7 for 60 minutes each b: participants seen individually for 10 minutes each session c: participants received leaflet at each 4 sessions regarding cue avoidance and food management, seen in group format d: participants received leaflet at each 4 sessions regarding cue avoidance and food management, seen individually e: participants completed daily food diary which was discussed at each of 4 sessions, seen in group format f: participants completed daily food diary which was discussed at each of 4 sessions, seen individually g: participants received same leaflet and completed same daily food diaries, seen in group format h: participants received same leaflet and completed same daily food diaries, seen individually **Allocated**: a: 17, b: 21, c: 20, d: 22, e: 19, f: 20, g: 20, h: 21 **Completed**: a: 8, b: 9, c: 7, d: 7, e: 6, f: 6, g: 8, h: 7 at 69 weeks **% Dropout**: 64% overall at 69 weeks **Assessed**: a: 8, b: 9, c: 7, d: 7, e: 6, f: 6, g: 8, h: 7 at 69 weeks	**Length of follow-up**: 69 weeks **Outcome**: weight data	Only groups a, b, c and d used for comparisons **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Kaplan, 1987	**Randomisation**: random assignment by group, no further details. Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: possibly	**Location**: San Diego State University and University of California, USA **Period of study**: before 1987 **Inclusion criteria**: either gender, confirmation of type 2 diabetes by physician, 12-hour fasting plasma glucose > 3.63 mmol/l, $40 deposit, some of which was contingent on attendance in amounts ranging from $1 to $10 **Exclusion criteria**: heart problems or other diseases that may interfere with full participation in the study **Gender**: 45 women, 32 men (gender unknown for 1 participant who died in an accident a few days after initial assessment) **Age** (years): mean (SD) a: 54.87 (12.32), b: 53.81 (8.04), c: 56.96 (8.95), d: 54.50 (8.83) $n = 76$ **Weight** (kg): mean (SD) a: 83.87 (16.9), b: 89.21 (21.07), c: 92.05 (20.35), d: 92.16 (21.78) $n = 76$ **Baseline comparability**: yes	**Timing of active intervention**: a–d: 10 weeks with follow-up at 18 months, contacted 12 times (baseline then for 2-hour sessions weekly for first 10 weeks, then at 18 months) **Description of intervention**: a + b: all participants received the exchange diet of 1200 kcal/day and an exercise prescription a: dietician explained exchange diet, consisted of 50% complex CHO, 20% protein and 30% fat; behavioural modification treatment programme was based on modern learning theory and included goal identification, weekly individual feedback from eating behaviour diaries, cognitive restructuring, methods for controlling food consumption, cue identification, identifying positive reinforcement and brief relaxation strategies as an alternative method of coping with stress b: exercise-focused programme including goal setting, self-monitoring and target heart rates obtained from graded exercise test and set at 60–70% maximum heart rate; exercise dairies were completed weekly and graphed, exercise leaders walked with the participants (recommended exercise for all but 1 participant) and consisted of 20 minutes' stretching, 45–60 minutes' walking and 5–10 minutes' stretching from weeks 3 to 10; participants encouraged to perform these exercise sessions at least 2 more times weekly and to attend other adult fitness programme sessions; 30 minutes' exercise-focused behavioural group discussion followed the programmed exercise sessions, contracts formed in week 10 regarding maintenance of exercise c: modified version of diet intervention received by group a for the first 5 weeks, week 6 focused on exercise information, and weeks 7–10 consisted of the exercise and behaviour sessions received by group b d: 2-hour weekly presentations for first 10 weeks from various healthcare specialists giving diabetes information but no specific information on behavioural changes, information given regarding behavioural therapy, but	**Length of follow-up**: 18 months **Outcomes**: weight data, HbA_{1c} deaths, QoL, cost utility analysis	**Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
			participants did not experience any behavioural strategies **Allocated**: 78 in total **Completed**: 70 in total at 18 months **% Dropout**: 10% overall at 18 months **Assessed**: unclear		
Karvetti, 1992 Karvetti, 1992a: women Karvetti, 1992b: men	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: health centres, Turku, Finland **Period of study**: before March 1992 **Inclusion criteria**: either gender, 17–65 years, BMI $\geq$ 27 kg/m^2 **Exclusion criteria**: diabetes or other disease that would prevent compliance with programme **Gender**: 127 women, 116 men **Age** (years): mean (SD) 48 (11) completers **BMI** (kg/m^2): mean (SD) 34 (5) completers **Baseline comparability**: yes	**Timing of active intervention**: a: 6 weeks of intensive treatment, with follow-up to 1 year, contacted 13 times (1.5-hour group session once a week for initial 6 weeks, then 4 times at monthly intervals, then twice every second month to 1 year) b: no treatment, contacted twice (baseline and at 1 year) **Description of intervention**: a: participants divided into 8 subgroups of 12–18 participants led by 7 trained public health nurses who instructed and motivated participants regarding weight reduction plan, nutrition education, physical activation, dietary, health and psychological counselling; initial 6-week intensive course also included 3 separate lectures by a physician, psychologist and physiologist to support participants in weight reduction; participants advised to consume 1200 kcal/day, low in fat and sugar, moderate in milk products, cereals, meat and fish, high in vegetables; 3 meals a day plus snack in afternoon and evening b: participants not given any instructions, informed selected for weight reduction course after assessment at 1 year **Allocated**: a: 126, b: 117 **Completed**: a: 93, b: 96 at 1 year **% Dropout**: a: 26%, b: 18% at 1 year **Assessed**: a: 93, b: 96 at 1 year	**Length of follow-up**: 1 year (treatment group only follow-up for 7 years) **Outcomes**: weight data, total cholesterol, HDL cholesterol, SBP, DBP, compliance	Author provided mean and SD change in all risk factors by treatment group **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Laitinen, 1993 Laitinen, 1993a: women Laitinen, 1993b: men	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: possibly	**Location**: University Hospital, Finland **Period of study**: before 1993 **Inclusion criteria**: either gender, 40–64 years, newly diagnosed NIDDM (fasting plasma glucose ≥ 6.7 mmol/l in repeated measurements) **Exclusion criteria**: not stated **Gender**: 37 women, 49 men **Age** (years): mean (SD) a: 50.7 (7.7) men $n = 21$, 53.7 (6.3) women $n = 19$; b: 54.0 (6.6) men $n = 28$, 54.4 (6.4) women $n = 18$ **BMI** (kg/m^2): not stated by group **Weight** (kg): mean (SD) a: 88.3 (14.1), b: 88.8 (14.0) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 24 months, contacted 8 times (baseline, then at 2 monthly intervals for 12 months, then at 24 months) **Description of intervention**: a + b: all participants received basic diabetes education during 3 months before randomisation a: individually tailored diabetic diet, energy restricted with ≤ 30% from fat (≤ 10% from saturated fatty acids, ≥ 20% from unsaturated fatty acids), ≤ 300 mg cholesterol/day, increased intake of unrefined CHO: food records; recommended exercise 3–4 times/week of 30–60 minutes each session, of either walking, jogging, swimming, cycling or skiing; exercise records, behaviour modification topics, e.g. what to do instead of eating and how to manage parties; goals were weight reduction, normoglycaemia, correction of dyslipidaemias and normalisation of elevated blood pressure b: conventional routine diabetic treatment **Allocated**: a: 40, b: 46 **Completed**: a: 40, b: 46 at 1 year; a: 38, b: 44 at 2 years **% Dropout**: a: 5%, b: 4% at 2 years **Assessed**: a: 40, b: 46 at 1 year; a: 38, b: 44 at 2 years	**Length of follow-up**: 2 years **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, SBP, DBP, HbA_{1c}, fasting plasma glucose, diabetes control	Weight only given by gender at 2 years, no data available to calculate BP change at 2 years, denominators vary between reports **Sponsorship**: Finnish Foundation for Diabetes Research, Emil Aaltonen Foundation, the Kyllikki and Uolevi Lehikoinen Foundation, North Savo Regional Fund of the Finnish Cultural Foundation

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Lindahl, 1999	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: Umea University, Sweden **Period of study**: before December 1998 **Inclusion criteria**: either gender, BMI > 27 kg/m^2, abnormal OGTT **Exclusion criteria**: already taken part in lifestyle modification programme, too physically ill to participate **Gender**: 117 women, 69 men (total number of participants included in analyses $n = 186$) **Age** (years): mean (SEM) a: 54.8 (0.94), b: 56.2 (0.85) **BMI** (kg/m^2): mean (SEM) a: 31.0 (0.33), b: 30.2 (0.33) **Baseline comparability**: fasting glucose and TGs significantly lower in intervention group a ($p = 0.0001$, $p = 0.04$ respectively) and intervention group b had a higher BMI ($p = 0.06$)	**Timing of active intervention**: a: 1 month with 4-day follow-up stay at 12 months (full board at a wellness centre for initial month) b: baseline and at 12 months **Description of intervention**: a: full board for initial month which included 140 hours of scheduled activities including aerobic exercise of low to moderate intensity for 2.5 hours daily; diet of 1800 kcal/day for men and 1500 kcal/day for women consisting of 20% intake from fat and high in fibre to produce a slow but persistent weight decline; behavioural modification strategies included stress management and relapse prevention; no alcohol was permitted and participants were strongly encouraged not to smoke; additional learning session for 4 days at 12 months b: health survey and 30–60-minute counselling session which included oral and written advice on lifestyle changes regarding impaired glucose tolerance and obesity, repeated at 12 months **Allocated**: a: 100, b: 94 **Completed**: a: 96, b: 94 at 12 months **% Dropout**: a: 4%, b: 0% at 12 months **Assessed**: a: 93, b: 93 at 12 months (not ITT)	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, TGs, SBP, DBP, fasting plasma glucose	**Sponsorship**: Swedish Medical Research Council, Swedish Council of Forestry and Agricultural Research, Swedish Council for Planning and Co-ordination of Research, Joint Committee of the Northern Sweden Health Care Region, the Heart and Chest Fund, Swedish Public Health Institute, Västerbotten County Council

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Long, 1983	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: outpatients, Coventry, UK **Period of study**: before 1983 **Inclusion criteria**: women, 18–60 years, BMI > 25 kg/m^2 **Exclusion criteria**: expectant mothers, diabetes, preoperative patients, began weight loss as inpatients, recent dramatic weight reduction **Gender**: 36 women **Age** (years): mean (range) 36.8 (18–56) overall **BMI** (kg/m^2): mean (range) 33.5 (28.9–49.4) **Baseline comparability**: yes	**Timing of active intervention**: a + b + c: 16 weeks with follow-up to 1 year post-treatment, contacted 20 times (baseline then weekly for 16 weeks then at 3, 6 and 12 months post-treatment) **Description of intervention**: a: advised regarding high-fibre diet tailored to give 1000–1200 kcal/day, seen individually by dietitian for 45 minutes initially then 15 × 15-minute sessions during initial 16 weeks, advised on weight reducing diets, nutrition, commercial slimming foods, seasonal topics and weight maintenance b: 12 x 1-hour group sessions plus 4 brief 30-minute weigh-in sessions during initial 16 weeks; diet advice same as group a and also fostered high expectation of weight loss based on group support c: 12 x 90-minute sessions held weekly for first 16 weeks with dietitian and clinical psychologist plus 4 brief weigh-in sessions; first 15–20 minutes of each group session participants given same diet advice as groups a and b; participants discussed application of behavioural strategies based on learning principles following each of 12 didactic sessions including self-monitoring, stimulus control, slowing rate of eating, generating social support, exercise, dietary planning, preplanning, individual problem solving, assertiveness and cognitive restructuring b + c: only average group weight loss reported to group, not individual weights a + b + c: all participants received same advice regarding obesity, health, nutrition and weight reduction, told successful weight loss depended on reducing calorie intake and/or increasing physical activity **Allocated**: a: 12, b: 12, c: 12 **Completed**: a: 7, b: 7, c: 9 at 68 weeks **% Dropout**: a: 42%, b: 42%, c: 25% at 68 weeks **Assessed**: a: 7, b: 7, c: 9 at 68 weeks	**Length of follow-up**: 68 weeks **Outcome**: weight data	Median weight change at 12 months assumed similar to mean and SDs calculated **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Murphy, 1982 Murphy, 1982a: couple + 1-party contracts vs individual + 1-party contracts Murphy, 1982b: couple + 2-party contracts vs individual + 2-party contracts	**Randomisation**: couples randomly assigned, no further details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: Baton Rouge community, USA **Period of study**: before January 1982 **Inclusion criteria**: married couples, 20–80% above IBW (USDA 1969), spouse willing to attend all treatment sessions, no contraindications for restricting intake or increasing exercise (decided by physician) **Exclusion criteria**: no details **Gender**: 50 women, 25 men (n = 75, all participants attending first session) **Age** (years): mean a: 35.3, b: 39.7, c: 42.3, d: 47.5, e: 42.0, f: 39.1 (n = 75) **BMI** (kg/m^2): mean a: 31.50, b: 32.03, c: 29.94, d: 30.49, e: 31.97, f: 29.89 (n = 75) **Baseline comparability**: yes	**Timing of active intervention**: a + e: 10 weeks with follow-up to 4 years post-treatment, contacted 21 times (baseline then 11 x 1.5-hour sessions in first 10 weeks, then at 12, 15, 18, 22, 29 and 36 weeks, 1 year, 2 years and 4 years post-treatment) f: 10 weeks, contacted 12 times (baseline then 11 × 1.5-hour sessions in first 10 weeks) **Description of intervention**: a: received treatment manual which focused on 3 meals per day and occasional snacks to reduce calorie intake (minimum 1000 kcal/day) and increasing calorie expenditure through walking; participants attended alone and entered into 4 contingency contracts regarding calories and nutrition, eating habits, exercise and problem behaviours; participants self-selected rewards and punishments b: received same manual except for contingency contracts, attended alone, both participant and spouse agreed contingency contracts and spouse encouraged to participate actively in assisting with compliance and controlling rewards (mutually rewarding and/or punishing) c: received identical manual to group a, attended with spouse, participant alone responsible for contingency compliance, rewards and punishment d: received identical manual to group b, both participant and spouse attended sessions and both took part in contingency contracts e: attended alone, did not receive manual or enter into contingency contracts, group support format with therapist acting as facilitator, discussed possible strategies for successful weight loss f: waiting list control for initial 10 weeks only, no treatment received, weight measured at week 1 and week 10 **Allocated**: a: 19, b: 15, c: 14, d: 16, e: 15, f: 18 **Completed**: a: 4, b: 6, c: 4, d: 8, e: 6 at 1 year; a: 7, b: 7, c: 5, d: 8, e: 6 at 2 years; a: 4, b: 4, c: 5, d: 6, e: 6 at 4 years	**Length of follow-up**: 4 years Outcome: weight data	SDs calculated **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
			% Dropout: a: 63%, b: 53%, c: 64%, d: 50%, e: 60% at 2 years; a: 79%, b: 73%, c: 64%, d: 63%, e: 60% at 4 years **Assessed**: a: 4, b: 6, c: 4, d: 8, e: 6 at 1 year; a: 7, b: 7, c: 5, d: 8, e: 6 at 2 years; a: 4, b: 4, c: 5, d: 6, e: 6 at 4 years		
Narayan, 1998	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Pima Indians of Arizona, USA **Period of study**: before July 1997 **Inclusion criteria**: either gender, 25–54 years, BMI $\geq$ 27 kg/m^2 (men), $\geq$ 25 kg/m^2 (women), normoglycaemia (2-hour-plasma glucose $<$ 7.8 mM) **Exclusion criteria**: pregnancy or intention to become pregnant, previous diagnosis of diabetes, current self-reported physical activity $\geq$ 20 hours/week, prescribed low-fat diet, another household member already randomised to the study, evidence of ischaemic heart disease, chronic illness, current steroid, thiazide or β-blocker treatment, condition likely to interfere with informed consent **Gender**: 72 women, 23 men **Age** (years): median a: 34, b: 33 **BMI** (kg/m^2): median a: 36.5, b: 33.2 **Baseline comparability**: fasting plasma glucose significantly higher in group a ($p = 0.03$)	**Timing of active intervention**: a: 52 weeks, contacted minimum 53 times (baseline then weekly group meetings and home visits to week 52) b: 52 weeks, contacted 13 times (baseline then monthly to week 52) **Description of intervention**: a: structured activity and nutritional intervention programme by an American Diabetes Association-recommended dietitian, decrease fat intake and alcohol intake, increase fibre and increase energy expenditure by 700–1000 kcal/week by e.g. walking 10–12 hours/month and keeping activity log; behavioural techniques included role playing, modelling and problem solving, food tasting and grocery store tours b: control group with self-directed learning with Pima culture appreciation group meetings to discuss current/historical lifestyles, local speakers, participants contributed to newsletters carrying Pima poetry, stories and folklore; basic printed material regarding healthy eating and exercise information, detailed interview of 40–120 minutes on health and lifestyle **Allocated**: a: 48, b: 47 **Completed**: a: 45, b: 45 at 52 weeks **% Dropout**: a: 4%, b: 6% at 52 weeks **Assessed**: a: 45, b: 45 at 52 weeks	**Length of follow-up**: 52 weeks **Outcomes**: weight data, total cholesterol, TGs, SBP, DBP, fasting plasma glucose	Author confirmed numbers assessed in each group at 12 months, medians assumed similar to means and SDs calculated **Sponsorship**: Community Task Force, Gila River Indian Community

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
ODES, 1995	**Randomisation**: stratified by gender, sealed envelope with randomisation number and name of treatment group. Allocation concealment: A **Assessor blinding**: only blinded blood analyses **ITT**: no	**Location**: Ullevaal Hospital, Oslo, Norway **Period of study**: before September 1994 **Inclusion criteria**: either gender, 41–50 years, sedentary (exercise no more than once a week), BMI > 24 kg/m^2, DBP 86–99 mmHg, total cholesterol 5.2–7.74 mmol/l, HDL cholesterol < 1.2 mmol/l, fasting serum TGs > 1.4 mmol/l **Exclusion criteria**: overt diabetes/CVD, other disease or drugs that could interfere with the test results, treatment with antihypertensive drugs, acetylsalicylic acid, lipid-lowering diet, personal traits unsuitable for participation in the trial **Gender**: 21 women, 198 men **Age** (years): mean (SD) 44.9 (2.5) **BMI** (kg/m^2): mean (SD) a: 29.54 (3.89), b: 28.56 (3.22), c: 28.57 (3.47), d: 28.30 (3.15) **Baseline comparability**: total cholesterol and LDL cholesterol were significantly lower in both the exercise and the diet + exercise groups ($p < 0.05$)	**Timing of active intervention**: a: 12 months, contacted 4 times (baseline, 3, 9 and 12 months) b: 12 months, contacted 158 times (baseline, 3 times a week and follow-up at 12 months) c: 12 months, contacted 160 times (baseline, 3 times a week, 3, 9 and 12 months) d: contacted twice (baseline and at 12 months) **Description of intervention**: a: participants given dietary counselling with spouse at baseline and then individually at 3- and 9-month follow-up sessions; diet adapted to individual's risk profile with the main focus on energy restriction in those overweight, increase in the intake of fish products and vegetables, decrease in the intake of saturated fat, cholesterol and sugar, and salt restriction for participants with elevated BP; weight targets agreed and set, 180-item food frequency questionnaire at baseline and 12 months b: initial 8 weeks, intensity and duration of supervised endurance workouts increased progressively, then maintained at 3 times/week for 1 hour each session at 60–80% maximum heart rate as assessed at baseline using treadmill; 60% of each workout was aerobic, 25% circuit training and 15% fast walking/jogging, attendance measured and exercise log book kept c: identical diet counselling as described for group a and participants attended same exercise sessions as described in group b d: participants told not to change lifestyle and that after 1 year they would be offered dietary advice and supervised physical training a–d: all participants advised to stop smoking **Allocated**: a: 55, b: 54, c: 67, d: 43 **Completed**: a: 52, b: 49, c: 65, d: 43 at 12 months **% Dropout**: a: 5%, b: 9%, c: 3%, d: 0% at 12 months (includes 5 participants excluded) **Assessed**: a: 52, b: 49, c: 65, d: 43 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, fasting plasma glucose, cancer, deaths	Discrepancy of outcome data between trial papers **Sponsorship**: Research Council of Norway, Norwegian Council of Cardiovascular Diseases, Insurance company Vital Friskvern

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Ost, 1976	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Uppsala, Sweden **Period of study**: before January 1976 **Inclusion criteria**: either gender, ≥ 15% overweight **Exclusion criteria**: not stated **Gender**: 38 women, 7 men **Age** (years): mean 40.9 overall **Weight** (kg): mean (SD) a: 87.0 (12.4), b: 86.6 (9.4), c: 81.5 (16.1) **Baseline comparability**: significant difference at baseline in weight between groups a and c and groups b and c	**Timing of active intervention**: a: 16 weeks with follow-up at 68 weeks, contacted 22 times (baseline then 30 minutes twice a week for 4 weeks, then weekly for 12 weeks, then at 68 weeks) b: 16 weeks with follow-up at 68 weeks, contacted 10 times (baseline then 8 sessions in first 16 weeks, then at 68 weeks) c: assessed at baseline, 16 weeks and 68 weeks **Description of intervention**: a + b + c: all participants received 45-minute baseline lecture on food and nutrition a: focus of first 4 sessions was behavioural therapy consisting of situational control of overeating such as cue avoidance; focus of sessions 5–7 was 500 kcal/day deficit diet with recommended food plan (based on food exchanges) nearest to this value chosen (1000, 1200, 1500 and 1800 kcal food plans), calorie count diary completed; focus of session 8 was to increase calorie expenditure and introduction of regular physical exercise and a daily exercise record, diet and exercise designed to produce 0.7 kg of weight loss per week b: fenfluramine maximum 60 mg twice daily, nutrition and exercise advice c: waiting list control condition, participants told that they could not receive treatment at moment due to large number of applicants and would receive treatment at a later date **Allocated**: a: 15, b: 15, c: 15 **Completed**: a: 11, b: 11, c: 11 at 68 weeks **% Dropout**: a: 27%, b: 27%, c: 27% at 68 weeks **Assessed**: a: 11, b: 11, c: 11 at 68 weeks (ITT)	**Length of follow-up**: 68 weeks **Outcome**: weight data	Only groups a and c used for comparisons **Sponsorship**: Swedish Council for Social Science Research, Alfred E Benzon

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Pavlou, 1989 1 Pavlou, 1989 1ca: PSMF + Ex vs LCD + Ex Pavlou, 1989 1ce: PSMF + Ex vs VLCD (420 kcal) + Ex Pavlou, 1989 1cg: PSMF+ Ex vs VLCD (800 kcal) + Ex Pavlou, 1989 1db: PSMF vs LCD Pavlou, 1989 1df: PSMF vs VLCD (420 kcal) Pavlou, 1989 1dh: PSMF vs VLCD (800 kcal) Pavlou, 1989 1ea: VLCD (420 kcal) + Ex vs LCD + Ex Pavlou, 1989 1fb: VLCD (420 kcal) vs LCD Pavlou, 1989 1ga: VLCD (800 kcal) + Ex vs LCD + Ex	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: Boston University, USA **Period of study**: before 1989 **Inclusion criteria**: men, 26–52 years, euthyroid, free from any physical, psychological or metabolic impairment **Exclusion criteria**: not stated **Gender**: 160 men **Age** (years): mean (SD) a: 41.5 (7.59), b: 42.9 (6.63), c: 45.1 (10.0), d: 49.6 (8.4), e: 41.8 (10.44), f: 41.8 (7.57), g: 46.1 (9.33), h: 44.5 (9.6) (completers) **BMI** (kg/m^2): mean a: 32.54, b: 32.4, c: 32.07, d: 31.5, e: 30.13, f: 34.82, g: 31.89, h: 33.78 (completers) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 8 weeks plus 18 months post-treatment follow-up (weekly from baseline to week 8 then at 8 months and 18 months post-treatment) **Description of intervention**: a–h: all participants attended weekly educational sessions up to week 8 that included behaviour modification, diet and general nutrition and exercise education; all participants given multivitamins, daily food and activity record to week 8, non-caloric liquids including coffee were allowed in unrestricted amounts, a + b: BCDD where 1000 kcal/day selected from usual 4 food groups in quantities thought to meet basic requirements c + d: PSMF ketogenic diet of meat, fish and fowl used as only dietary source to provide equivalent of 1.2 high biological-value protein/kg of IBW or 1000 kcal/day, no CHO and all fat ingested came from meat, fish and fowl; 2.8 g potassium chloride daily e + f: DPC-70; assumed PSMF 420 kcal/day diet of powdered protein–CHO mix derived from calcium caseinate, egg albumin and fructose dissolved in water or other non-caloric liquid, fat content zero, fortified with vitamins and minerals to meet US Recommended Daily Allowance, mix 5 packets per day in 850 g of non-caloric liquid and consume no other nutrients; 2.8 g potassium chloride daily g + h: DPC-800; assumed VLCD 800 kcal/day diet provided in powdered form to be consumed similarly to DPC-70, provided a complete mixture of nutrients and similar nutritionally to BCDD except for fewer calories a + c + e + g: 90-minute supervised exercise programme 3 times/week from baseline to week 8 which consisted of 35–60 minutes of aerobic activity, e.g. walk–jog–run (70–85% max. heart rate), callisthenics and relaxation techniques b + d + f + h: participants to continue normal daily activity and not to participate in any form of additional supervised and/or unsupervised physical activity during initial 8 weeks	**Length of follow-up**: 86 weeks **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, SBP, DBP	Weight data derived from graph and SDs calculated **Sponsorship**: part funded by Sandoz Nutrition

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Pavlou, 1989 1hb: VLCD (800 kcal) vs LCD			**Allocated**: 160 **Completed**: a: 10, b: 11, c: 16, d: 16, e: 10, f: 13, g: 18, h: 16 at 18 months post-treatment **% Dropout**: 31% at 18 months post-treatment **Assessed**: a: 10, b: 11, c: 16, d: 16, e: 10, f: 13, g: 18, h: 16 at 18 months post-treatment (completers)		
Pavlou, 1989 2 Pavlou, 1989 2a: no Ex Pavlou, 1989 2b: Ex	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: Boston University **Period of study**: before 1989 **Inclusion criteria**: men, 26–52 years, euthyroid, free from any physical, psychological or metabolic impairment **Exclusion criteria**: not stated **Gender**: 24 men **Age** (years): mean (SD) a: 49.2 (6.48), b: 44.8 (7.84), c: 46.1 (5.14), d: 48.1 (4.65) (completers) **BMI** (kg/m^2): mean a: 31.75, b: 31.92, c: 31.11, d: 30.4 (completers) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 weeks plus 36 months post-treatment follow-up, contacted 16 times (weekly from baseline to week 12, then at 6, 8 and 18 months post-treatment) **Description of intervention**: a + b + c + d: all participants attended weekly educational sessions up to week 12 that included behaviour modification, diet and general nutrition and exercise education; all participants given multivitamins, daily food and activity record to week 12, non-caloric liquids including coffee were allowed in unrestricted amounts a + b: BCDD where 1000 kcal/day selected from usual 4 food groups in quantities thought to meet basic requirements c + d: PSMF, ketogenic diet of meat, fish and fowl used as only dietary source to provide equivalent of 1.2 high biological-value protein/kg of IBW or 1000 kcal/day, no CHO and all fat ingested came from meat, fish and fowl; 2.8 g potassium chloride daily a + c: 90-minute supervised exercise programme 3 times/week from baseline to week 12 which consisted of 35–60 minutes of aerobic activity, e.g. walk–jog–run (70–85% max. heart rate), callisthenics and relaxation techniques b + d: participants to continue normal daily activity and not to participate in any form of additional supervised and/or unsupervised physical activity during initial 8 weeks **Allocated**: 24 overall **Completed**: a: 5, b: 6, c: 5, d: 5 at 36 months post-treatment **% Dropout**: 13% at 36 months post-treatment **Assessed**: a: 5, b: 6, c: 5, d: 5 at 36 months post-treatment	**Length of follow-up**: 168 weeks **Outcome**: weight data	Weight data derived from graph, SDs calculated **Sponsorship**: part funded by Sandoz Nutrition

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Pearce, 1981	**Randomisation**: randomly assigned from stratified blocks. Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: University of Manitoba, Winnipeg, Canada **Period of study**: before July 1980 **Inclusion criteria**: women, 20–60 years, ≥ 9 kg or ≥ 20% overweight (Metropolitan Life Insurance tables), doctor's permission, $50 deposit refunded on attendance of 9 out of 10 sessions and 3 follow-ups **Exclusion criteria**: involvement in another weight control programme or psychotherapy, obesity-related morbidity, e.g. diabetes, thyroid problems, colitis, ulcers, taking medication that affected water retention, appetite or metabolism, pregnant or planning pregnancy, unwilling to commit for 15 months or unwilling to pay $50 deposit, husbands unwilling to participate **Gender**: 68 women **Age** (years): mean 39.0 overall **Weight** (kg): mean 87.43 overall **Baseline comparability**: not stated	**Timing of active intervention**: a + b: 12 months, contacted 14 times (baseline then weekly for initial 10 weeks, then at 3, 6 and 12 months) **Description of intervention**: a + b + c + d: advised to reduce calorie intake to pretreatment weight × 7 in pounds (1350 kcal/day), minimum 1000 kcal/day, and advised to increase physical activity if weight not lost a + b + c: training in behavioural self-control including self-monitoring, imagery techniques, stimulus control and behaviour management methods a: cooperative spouse condition, spouses attended and actively helped wives to lose weight, spouses monitored each other's behaviour b: wives alone condition, spouses not involved and wives attended alone, wife unobtrusively monitored husband's behaviour c: non-participating spouse condition, spouse sent letter asking them to detach themselves from wife's weight losing efforts, wife attended alone and self-monitored and unobtrusively monitored husband's behaviour d: focus directed at hypothetical and underlying causes of overeating, no training on behavioural techniques, attention diverted from current behaviours to past ones e: waiting list control, participants received treatment after initial 10 weeks (therefore data not used for subsequent analyses) **Allocated**: a: 14, b: 13, c: 14, d: 13, e: 14 **Completed**: a: 12, b: 12, c: 12, d: 12 at 12 months **% Dropout**: a: 14%, b: 8%, c: 14%, d: 15% at 12 months **Assessed**: a: 12, b: 12, c: 12, d: 12 at 12 months	**Length of follow-up**: 12 months **Outcome**: weight data	Only groups a + b used for comparison **Sponsorship**: none mentioned
Phenix, 1991	**Randomisation**: cluster randomised, participants chose 1 of 7 predetermined class times, each class time was assigned 15	**Location**: California School of Professional Psychology, Fresno, USA **Period of study**: before 1990 **Inclusion criteria**: women, 18–62 years, 115–200% IBW	**Timing of active intervention**: a–f: 8 weeks and follow-up at 12 months, contacted 10 times (baseline, 2 hours each week for initial 8 weeks, then at 12 months) h: contacted at baseline and at 12 months for the purpose of this study (received same treatment as group g after acting	**Length of follow-up**: 12 months **Outcome**: weight data	Cluster RCT **Sponsorship**: none given

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
	participants in a non-random manner, 7 treatment conditions were randomly assigned to 7 times. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	(Metropolitan Life Insurance tables, 1959), non-refundable $10 materials fee, written approval by own physician, $32 deposit with refund contingent on attendance and adherence **Exclusion criteria**: participation in a weight loss programme, obesity-related health disorders, e.g. diabetes and heart disease; medications that would affect weight loss, pregnancy or planning pregnancy in next 12 months **Gender**: 105 women **Age** (years): not stated **Weight** (kg): mean (SD) a: 85.16 (17.12), b: 81.12 (14.61), c: 76.23 (10.69), d: 85.77 (14.28), e: 76.43 (8.71), f: 84.17 (22.35), g: 79.24 (11.54), h: 75.97 (12.54) **Baseline comparability**: yes	as waiting list control for initial 8 weeks, details of which are not reported) **Description of intervention**: a–f: all participants given nutrition education and advised regarding 1000–1200 kcal/day diet consisting of 65% complex CHO, 20% fat, 15% protein and 100 mg cholesterol (American Heart Association diet) a: weekly food tasting for initial 8 weeks of treatment b: overt behaviour therapy which focused on self-control including self-monitoring strategies, stimulus control, cue reduction, slowing the rate of eating, coping and problem solving c: cognitive behaviour therapy which focused on modifying maladaptive eating behaviour, including cognitive restructuring and relapse prevention techniques d: given exercise education and home exercise assignments consisting of 20 minutes of aerobic exercise 3 times/week estimated to use 200–300 kcal per session using graded intensity and working at 70–80% maximum heart rate e: same exercise as group d plus same overt behaviour therapy as group b f: same exercise as groups d and e plus same cognitive behaviour therapy as group c g: same exercise as groups d, e and f plus same overt behaviour therapy as groups b and e plus same cognitive behaviour therapy as groups c and f h: received baseline testing and assessment at 12 months and told would receive most successful active treatment of the trial after the initial 8 weeks; received same treatment at week 9 as group g (results not reported) **Allocated**: 105 in total, numbers allocated to each group at baseline not stated a: 12, b: 12, c: 12, d: 14, e: 10, f: 13, g: 11, h: 11 (total 95) at week 9 **Completed**: a: 11, b: 11, c: 10, d: 13, e: 10, f: 11, g: 10, h: 10 at 12 months **% Dropout**: 18% at 12 months **Assessed**: a: 11, b: 11, c: 10, d: 13, e: 10, f: 11, g: 10, h: 10 at 12 months		

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Pritchard, 1997	**Randomisation**: random numbers table. Allocation concealment: B(II) **Assessor blinding**: no **ITT**: yes	**Location**: University of Melbourne, Australia **Period of study**: before 1998 **Inclusion criteria**: men, 35–55 years, satisfactory cardiovascular fitness test, BMI 26–35 kg/m^2, 110–130% above IBW, otherwise healthy **Exclusion criteria**: not stated **Gender**: 66 men **Age** (years): mean (SD) a: 43.6 (6.0), b: 44.9 (6.5), c: 42.3 (4.5) 12-month completers only (n = 58) **BMI** (kg/m^2): mean (SD) a: 29.0 (2.8), b: 29.2 (2.8), c: 28.6 (2.8) 12-month completers only (n = 58) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 18 months, contacted 19 times (baseline then monthly, participants also encouraged to attend bimonthly motivational group breakfasts or lunch meetings with guest speakers or videos relevant to diet, exercise and health issues) **Description of intervention**: a: participants advised to adhere to low-fat intake of 22–25%/day and 500 kcal/day deficit, to avoid all foods rich in fat, discouraged from eating more than 1 sweet/day and more than 2 alcoholic drinks/day; personalised dietary plan designed to meet Recommended Daily Intake for use in Australia, given 'The Weight Loss Guide' by the Australian Heart Foundation, exercise restricted to prestudy level, completion of daily adherence calendar, at 13 months treatment b was added b: participants selected their own unsupervised aerobic exercise regimen of at least 3 sessions of 30 minutes each week at 65–75% maximum heart rate; initial heart rate over 33 hours of normal activity which included the selected exercise used to determine personal heart rate target zone; 11 participants walked, 2 jogged, 2 alternated jogging and swimming, 3 attended the gym and 3 rode exercise bikes, participants exercised 3–7 sessions/week, advised to avoid change in food intake, completion of daily adherence calendar, at 13 months treatment a was added c: attended monthly weight monitoring sessions where counselled to follow usual food and exercise habits, participants told would be able to enter weight loss programme at the end of this study, at 13 months treatments a + b were added **Allocated**: a: 24, b: 22, c: 20 **Completed**: a: 18, b: 21, c: 19 at 12 months **% Dropout**: a: 25%, b: 5%, c: 5% at 12 months Continued at month 13: a: 9, b: 14, c: 16 **Completed**: a: 9, b: 14, c: 16 **Assessed**: a: 18, b: 21, c: 19 at 12 months; a: 9, b: 14, c: 16 at 18 months	**Length of follow-up**: 18 months **Outcome**: weight data	Author provided unpublished report, data only used up to 12 months, discrepancy in data between reports **Sponsorship**: Victorian Health Promotion Foundation, William Buckland Foundation, Department of Medicine, University of Melbourne

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Pritchard, 1999 Pritchard, 1999a: dietitian vs control Pritchard, 1999b: doctor + dietitian vs control	**Randomisation**: random numbers tables Allocation concealment: B(II) **Assessor blinding**: no **ITT**: yes	**Location**: University general practice, Lockridge, Western Australia **Period of study**: November 1992–May 1994 **Inclusion criteria**: either gender, 25–65 years, patients with known history of type 2 diabetes, hypertension (BP > 140/90 mmHg at screening plus 2 similar recordings in past medical notes) and/or overweight (BMI > 25 kg/m^2) **Exclusion criteria**: mental illness, intellectual handicap, terminal illness, acute illness, pregnancy, taking part in other health education programmes **Gender**: 198 women, 75 men **Age** (years): 199 of 273 participants < 50 years **Weight** (kg): mean a: 91.7, b: 85.5, c: 89.1 **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted 7 times (baseline then 6 times by dietitian spread evenly over 12 months) c: contacted twice (baseline and 12 months) **Description of intervention**: a + b: counselling focused on principles of good nutrition and exercise and addressed problem areas in lifestyle and dietary patterns; counselled on food, shopping and cooking, food selection, meal planning and exercise programmes, advised to complete food records and diet history, advised to reduce total energy intake and to reduce intake from fat to ≤ 30%, CHO ≥ 50% and 20% protein; participants discouraged from smoking and to have 2 or more alcohol-free days/week with no more than 2 alcoholic standard drinks/day for women and 4 for men b: in addition participants were seen by GP at baseline and saw same GP on 2 other occasions during the 12 months for 5 minutes each time to encourage and monitor the participant c: participants received results of initial screening measurements and advised that queries were to be discussed with doctor at appointment, participants received their usual care by GP but did not receive any counselling by dietitian, mailed to reattend at 12 months **Allocated**: a: 92, b: 88, c: 90 **Completed**: a: 65, b: 48, c: 64 at 12 months **% Dropout**: a: 29%, b: 45%, c: 29% at 12 months (p = 0.022 for group b vs other groups) **Assessed**: a: 92, b: 88, c: 90 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, HbA_{1c} (type 2 diabetics only), BP (hypertensives only), costs	**Sponsorship**: Western Australian Health Promotion Foundation

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Rosenthal, 1980	**Randomisation**: stratified blocks of % overweight and age, no other details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Connecticut, USA **Period of study**: before 1980 **Inclusion criteria**: women, ≥ 10% above IBW (Metropolitan Life Insurance tables, 1970), husband and wife both willing to attend meetings every 2 weeks, willing to comply with demands of the weight loss programme, $10 commitment deposit (returned at first follow-up visit), signed medical release form certifying good health, signed form stating will not participate in concurrent obesity therapy **Exclusion criteria**: not stated **Gender**: 43 women **Age** (years): mean 34.5 overall **BMI** (kg/m^2): mean a: 27.56, b: 29.29, c: 28.80 (mean BMI for groups a + b: 28.43) **Baseline comparability**: yes	**Timing of active intervention**: a + b + c: 30 weeks, contacted 11 times (baseline then 8 × 75-minute group sessions twice monthly, follow-up at 6 weeks post-treatment and 3 years post-treatment) **Description of intervention**: a: husbands attended all 8 sessions with wives, 'Slim chance in a fat world' weight loss programme, husbands assigned readings and informed of behavioural ways in which they could help their wives to lose weight; sessions 5–8 discussed couples' specific situations b: husbands attended first 4 sessions to learn techniques for helping their wives to lose weight, then wives attended alone for following sessions, identical weight loss programme to group a c: no husband involvement, identical weight loss programme to groups a and b **Allocated**: unclear **Completed**: a: 4, b: 7, c: 9 at 3 years post-treatment (186 weeks in total) **% Dropout**: 53% overall at 3 years post-treatment **Assessed**: a: 4, b: 7, c: 9 at 3 years post-treatment	**Length of follow-up**: 186 weeks **Outcome**: weight data	Data combined for mean change in weight at 3 years post-treatment for groups a + b (full husband involvement and partial husband involvement, respectively) as no significant difference in weight loss found between these 2 groups at 30 weeks, SDs calculated **Sponsorship**: National Science Foundation

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Shah, 1996	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: University of Minnesota, USA **Period of study**: before 1996 **Inclusion criteria**: healthy, non-smoking women, 25–45 years, 20–40% above IBW **Exclusion criteria**: not stated **Gender**: 122 women **Age** (years): not stated **Weight** (kg): mean (SD) a: 79.92 (4.45), b: 79.70 (4.40) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 26 weeks plus follow-up visit at 12 months, contacted 18 times (baseline, then 16 times in first 26 weeks, then at 12 months) **Description of intervention**: a + b: all participants counselled on diet, exercise, menu planning, eating out, stimulus control, problem solving, social assertion, goal setting, relapse prevention; cooking demonstrations given, all participants advised to walk for 30 minutes on 5 days/week, all participants advised to keep a daily record of food intake and physical activity a: 1000–1200 kcal/day, fat intake ≤ 30% of total energy intake, ≤ 6 oz (170 g) meat/day (only poultry, fish and lean red meat), limit fats, oils, eggs and high-fat desserts, snacks and dairy produce, and replace with low-fat alternatives, increase complex CHO and limit simple sugars b: reduce fat intake to 20 g/day, unlimited complex CHO, limit meat, fish and poultry to ≤ 2 oz (57 g)/day, specific food recommendations otherwise the same as group a **Allocated**: 122 in total **Completed**: a: 39, b: 36 at 12 months **% Dropout**: 39% overall at 12 months **Assessed**: a: 39, b: 36 at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, QoL	Mean change in weight at 12 months calculated from actual values, SDs calculated **Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Sikand, 1988	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: Baylor College of Medicine, Houston, USA **Period of study**: before April 1988 **Inclusion criteria**: women, 21–60 years, obese **Exclusion criteria**: not stated **Gender**: 30 women **Age** (years): mean (SD) a: 39.8 (9.1), b: 37.8 (8.4) **Weight** (kg): mean (SD) a: 105.6 (23.6), b: 106.6 (15.2) **Baseline comparability**: yes	**Timing of active intervention**: a: 4 months, with telephone follow-up at 2 years, contacted 34 times (baseline, twice weekly for initial 4 months, then at 2 years) b: 4 months, with telephone follow-up at 2 years, contacted 18 times (baseline, weekly for initial 4 months, then at 2 years) **Description of intervention**: a + b: all participants placed on a VLCD (calorie content not given) consisting solely of milk-based protein powder for initial 4 months, received nutritional counselling, group support and discussion of behaviour modification strategies; all participants invited to an ongoing pay-for-service programme offered at clinic sponsoring the study after active treatment period a: received structured aerobic exercise programme twice weekly for first 4 months with additional exercise encouraged on other days b: participants neither encouraged to nor discouraged from exercising **Allocated**: a: 15, b: 15 **Completed**: a: 7, b: 8 at 2 years **% Dropout**: a: 53%, b: 47% at 2 years **Assessed**: a: 7, b: 8 at 2 years	**Length of follow-up**: 2 years **Outcome**: weight data	**Sponsorship**: Ross Laboratories

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Simonen, 2000	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Helsinki, Finland **Period of study**: before August 1999 **Inclusion criteria**: men and postmenopausal women, diagnosis of type 2 diabetes in past 2 years (fasting plasma glucose ≥ 7.0 mmol/l) **Exclusion criteria**: insulin therapy, diabetic microangiopathy, hepatic or thyroid disease; unstable angina pectoris or MI; or invasive coronary artery disease treatment in previous year **Gender**: 3 women, 13 men **Age** (years): mean (SD) a: 51.1 (8.8), b: 54.3 (3.4) **BMI** (kg/m^2): mean a: 31.94, b: 32.32 **Baseline comparability**: fasting plasma glucose and HbA_{1c} differed significantly between groups ($p < 0.05$)	**Timing of active intervention**: a + b: 3 months plus follow-up at 2 years **Description of intervention**: a + b: 6 week pretreatment phase consisting of *ad libitum* diet at home while metabolic tests carried out a: participants' dose of glibenclamide adjusted so that plasma glucose < 7.0 mmol/l and biguanides discontinued; low-energy diet where participants advised to consume low-fat low-cholesterol diet for 3 months a: hypoglycaemia treatment discontinued; very low-energy diet consisting of 3 daily servings of 140 kcal/serving (Cambridge diet), 1 serving = 14.2 g protein, 15 g CHO, 2.7 g fat, essential minerals, trace nutrients and vitamins for 3 months a + b: from month 4 until month 24 diets individually tailored by dietitian to provide daily energy balance of zero **Allocated**: a: 6, b: 10 **Completed**: a: 6, b: 10 at 24 months **% Dropout**: a: 0%, b: 0% at 24 months **Assessed**: a: 6, b: 10 at 24 months	**Length of follow-up**: 24 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, fasting plasma glucose	All 16 participants analysed in aggregate, author replied, only weight data outcome used as treatment by hypoglycaemic medications differed between groups **Sponsorship**: Helsinki University Central Hospital, Finnish Diabetes Research Association, The Howard Foundation

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Stenius-Aarniala, 2000	**Randomisation**: shuffling cards with the help of someone not involved in the study. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: private outpatient centre, Helsinki, Finland **Period of study**: before January 2000 **Inclusion criteria**: either gender, 18–60 years, BMI 30–42 kg/m^2, diagnosis of asthma with spontaneous diurnal variation or a bronchodilator response of ≥ 15%, non-smoker or having stopped smoking for ≥ 2 years and before the age of 50 **Exclusion criteria**: pregnancy, history of bulimia or anorexia, unstable angina or arrhythmia, untreated thyroid disease, symptomatic liver or gallbladder disorder, any other severe disease, insulin treatment, systemic steroid treatment, history of food allergy or intolerance to any component of the study's very low-energy diet preparation (Nutrilett), e.g. soya, fish, chocolate or lactose, history of adverse reactions to peas, beans or peanuts, poor motivation **Gender**: 29 women, 9 men **Age** (years): mean (range) a: 49.7 (34–60), b: 48.3 (23–60) **BMI** (kg/m^2): mean (range) a: 35.8 (31.3–39.4), b: 36.7 (32.8–41.8) **Baseline comparability**: yes for gender, age and weight	**Timing of active intervention**: a + b: 12 months, contacted 16 times (12 × 30-minute group sessions during initial 14 weeks, then at week 14, month 6 and month 12) **Description of intervention**: a + b: 2–3 week pretreatment phase consisting of lung function tests and laboratory tests to fulfil exclusion and inclusion criteria, then 2 weeks of baseline measurements a: 14-week weight reduction programme consisting of 12 × 30-minute group sessions and including 8 weeks very low-energy diet (Nutrilett) consisting of 420 kcal/day containing daily allowances of all essential nutrients; discussed same themes as controls but at a later date so that each group had the same amount of education about asthma and allergy at end of treatment b: 12 × 30-minute group sessions during initial 14 weeks where themes chosen by participants were discussed freely **Allocated**: a: 19, b: 19 **Completed**: a: 19, b: 19 at 52 weeks **% Dropout**: a: 0%, b: 0% at 52 weeks **Assessed**: a: 19, b: 19 at 52 weeks (ITT)	**Length of follow-up**: 52 weeks **Outcomes**: weight data, lung function tests, adverse events, QoL	SDs for mean change in weight calculated **Sponsorship**: The Finnish Cultural Association, Association of the Pulmonary Disabled, Wilhelm and Else Stockmann Foundation, Nycomed Pharma

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Straw, 1983 Straw, 1983a: weigh-in maintenance Straw, 1983b: individual problem-solving maintenance	**Randomisation**: randomised by blocks on percentage fat, rerandomised at week 11 to one of 2 maintenance conditions (blocked within treatment group on basis of amount of weight lost in treatment). Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Chicago, USA **Period of study**: before 1983 **Inclusion criteria**: women, ≥ 35% of body weight as fat (skinfold caliper) **Exclusion criteria**: serious physical or emotional problems, problems that required a special diet, e.g. diabetes or hypoglycaemia, severely limited physical activity, endocrine disorder, Beck Depression Inventory score ≥ 20, schedule did not allow random assignment **Gender**: 49 women **Age** (years): mean: 39.33 *n* = 42 (completers only) **Weight** (kg): mean (SD) a: 85.16 (13.97), b: 86.73 (16.52), c: 85.44 (14.66) **Baseline comparability**: not stated	**Timing of active intervention**: a + b + c: 10 weeks, contacted 11 times (baseline then 1 hour weekly for 10 weeks) a1 + b1 + c1: 42 weeks, contacted 9 times (monthly from week 11 to 12 months) a2 + b2 + c2: 42 weeks, contacted 12 times (30 minutes twice monthly from week 11 for 3 months, then monthly to 12 months) **Description of intervention**: a + b: participants required to purchase Ferguson's book '*Learning to eat*' and to complete all assignments in it; topics included self-monitoring, stimulus control, eating style, problem solving, activity management and social support a: participants seen in groups of 8–10 b: participants seen individually c: individually tailored, individually administered behavioural treatment based on food diaries, pedometer readings and supplementary questionnaires if needed, aim for 4 miles (6.4 km)/day walking, targeted 2–3 problem areas first using stimulus control, elimination exercises, activity management techniques, relaxation, cognitive therapy, assertiveness training, cognitive ecology, snack and cue elimination techniques a1 + b1 + c1: weight check each month where received encouragement a2 + b2 + c2: individual problem solving where participants determined topic and discussed for 30 minutes twice a month, then monthly to month 12 **Allocated**: a: 18, b: 15, c: 15; at week 11 a: 12, b: 12, c: 14 **Completed**: a1: 8, b1: 8, c1: 8 at 12 months; a2: 5, b2: 5, c2: 6 (includes 2 in a1 and 2 in b1 who did not wish to be rerandomised at week 11 and so received weigh-in treatment only) **% Dropout**: 18% overall at 12 months **Assessed**: a1: 6, b1: 6, c1: 8 at 12 months; a2: 5, b2: 5, c2: 6 at 12 months	**Length of follow-up**: 12 months **Outcome**: weight data	Mean change in weight calculated from change at week 10 plus change during weeks 11–52, SDs calculated, group c1 and c2 not used in comparisons **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Swinburn, 2001	**Randomisation**: unmarked envelope system, 6 participants from 1 worksite (Pacific Islands, all women) were assigned to active treatment group a. Allocation concealment: C **Assessor blinding**: no **ITT**: no	**Location**: University of Auckland, New Zealand **Period of study**: before November 1999 **Inclusion criteria**: either gender, ≥ 40 years, IGT (OGTT, 2-hour plasma glucose 7.8–11.0 mmol/l) or high normal plasma glucose (OGTT, 2-hour plasma glucose 7.0–7.8 mmol/l) **Exclusion criteria**: not stated **Gender**: 35 women, 101 men **Age** (years): mean (SD) a: 52.5 (6.5), b: 52.0 (6.7) **BMI** (kg/m^2): mean (SD) a: 29.08 (4.47), b: 29.17 (4.02) **Baseline comparability**: yes	**Timing of active intervention**: a: 1 year with follow-up to 5 years, contacted 116 times (baseline, monthly sessions for 1 year, then at 2, 3 and 5 years) b: assessed 6 times (baseline, 6 months, 1, 2, 3 and 5 years) **Description of intervention**: a: reduced-fat *ad libitum* diet, education and identification of strategies to reduce fat intake, personal goal setting, self-monitoring through food diaries, food label reading b: usual diet, general dietary advice regarding healthy food choices given at baseline only **Allocated**: 176 in total **Completed**: a: 66, b: 70 at 1 year; a: 47, b: 57 at 2 years; a: 48, b: 51 at 3 years; a: 51, b: 52 at 5 years **% Dropout**: 24% overall at 5 years **Assessed**: a: 66, b: 70 at 1 year; a: 47, b: 57 at 2 years; a: 48, b: 51 at 3 years; a: 51, b: 52 at 5 years	**Length of follow-up**: 5 years **Outcomes**: weight data, fasting plasma glucose, deaths	**Sponsorship**: Auckland Medical Research Foundation, National Heart Foundation of New Zealand, Lotteries Medical Board, Health Research Council of New Zealand

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
TAIM, 1992	**Randomisation**: stratified within clinical centre and by race, computer allocated by coordinating centre. Allocation concealment: A **Assessor blinding**: blinded to drug status only **ITT**: no	**Location**: 3 clinical centres in USA **Period of study**: before July 1991 **Inclusion criteria**: either gender, 21–65 years, 110–160% IBW, BP untreated or BP medication discontinued 2 weeks before start of study, 1 member per household, treated DBP ≤ 99 mmHg or untreated DBP 90–104 mmHg at preliminary screening, 90–100 mmHg at first clinic visit, < 115 mmHg at second visit (prerandomisation) **Exclusion criteria**: MI during past year or history of MI, history or other evidence of stroke, bronchial asthma, diabetes mellitus requiring insulin; history or other evidence of allergy to thiazides or β-blockers, creatinine ≥ 180 μm/l at baseline, other major disease, e.g. kidney disease, liver disease, cancer, pregnancy or likelihood of pregnancy during study, lifestyle or other conditions likely to affect compliance **Gender**: 100 women, 100 men **Age** (years): mean (SD) a: 48.6, b: 46.8 **BMI** (kg/m^2): mean a: 30.45, b: 30.14 **Baseline comparability**: significantly more women than men in group a	**Timing of active intervention**: a: 30 months, contacted minimum 25 times (baseline, 10 group sessions held weekly and monthly assessment in initial 6 months then every 6–12 weeks up to a maximum of 30 months) b: contacted 5 times (baseline, and 6, 12, 18 and 24 months) **Description of intervention**: b: no change in diet and given placebo a: diet counselling and nutrition education aimed at behaviour change, related activities (exercise) aimed at weight loss to achieve blood pressure control, given individual goal of calorie intake and weight loss of 10% baseline weight or 4.5 kg (whichever greater); given placebo a + b: all participants given step-up medication if necessary to control blood pressure, administered in double-blind fashion; if DBP ≥ 99 mmHg or 90–94 mmHg at 2 visits with 3-month interval or 95–99 mmHg at 2 visits with 2-week interval then 25 mg chlorthalidone or 50 mg atenolol prescribed, if still not controlled then open-label therapy used (known antihypertensive medication) **Allocated**: a: 100, b: 100 **Completed**: not clear **% Dropout**: not clear **Assessed**: a: 57, b: 61 at years 1 and 2 (participants excluded from analysis if failed to attend all 6, 12, 18 and 24-month assessments)	**Length of follow-up**: 2.5 years minimum **Outcomes**: weight data, treatment failures, deaths	**Sponsorship**: part funded by National Institutes of Health, ICI Americas, AH Robins Company

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
TOHP I, 1992	**Randomisation**: high weight strata of TOHP I randomised. Allocation concealment: A **Assessor blinding**: no **ITT**: possibly	**Location**: multicentre trial, USA **Period of study**: before March 1992 **Inclusion criteria**: either gender, 30–54 years, high–normal DBP and not taking antihypertensive drugs for past 2 months, BP based on 3 visits 10–30 days apart with cumulative averages of 75–97, 77–94, 80–89 mmHg; BMI 26.1–36.1 kg/m^2 for men, 24.3–36.1 kg/m^2 for women **Exclusion criteria**: clinical or laboratory evidence of cardiovascular or other life-threatening or disabling diseases, diabetes mellitus, chronic renal failure, cancer, pregnancy or wishing to become pregnant, psychiatric disorders, unwillingness or inability to comply with intervention or data collection, cholesterol ≥ 6.7 mmol/l **Gender**: 179 women, 385 men **Age** (years): mean (SD) a: 43.1 (6.0), b: 42.4 (6.2) **Weight** (kg): mean (SD) a: 90.2 (13.3), b: 89.3 (13.0) **Baseline comparability**: higher proportion of men in group a than in group b ($p = 0.016$)	**Timing of active intervention**: a: 18 months, contacted at baseline then 90-minute sessions weekly for first 14 weeks, then every 2 weeks, then every month to 18 months b: assessed 5 times (baseline, and 3, 6, 12 and 18 months) **Description of intervention**: a: weight reduction intervention focused on reducing calorie intake, reducing fat, sugar and alcohol intake; shopping, cooking and food selection behaviours; moderate increase in calorie expenditure through walking briskly 4–5 times/week for 45 minutes each session at 40–55% heart rate reserve; behavioural self-management through goals, reinforcement, social support, graphing weight, problem solving, relapse prevention and coping strategies; food and exercise diaries b: no treatment received **Allocated**: a: 308, b: 256 **Completed**: a: 293, b: 235 **% Dropout**: a: 5%, b: 8% at 18 months **Assessed**: a: 547, b: 554 at 36 months (weight data only)	**Length of follow-up**: 18 months **Outcomes**: weight data, SBP, DBP, mortality, development of hypertension	Sodium reduction and stress management treatment groups excluded from analyses **Sponsorship**: National Institutes of Health, Marion Laboratories, Schering-Plough, Warner-Lambert, Albion Laboratories

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
TOHP II, 1997	**Randomisation**: stratified by clinic, randomly assigned by phone or sealed randomisation envelopes. Allocation concealment: A **Assessor blinding**: yes **ITT**: possibly	**Location**: 9 clinical centres in USA **Period of study**: December 1990–March 1995 **Inclusion criteria**: either gender, 30–54 years, 110–165% IBW or BMI 26.1–37.4 kg/m^2 (men), 24.4–37.4 kg/m^2 (women), DBP 83–89 mmHg (average of all 9 measurements), SBP <140 mmHg, completion and return of 24-hour and separate 8-hour urine collection and 3-day food record **Exclusion criteria**: medically diagnosed hypertension, history of CVD, diabetes mellitus, malignancy in past 5 years (other than non-melanoma skin cancer), other serious life-threatening illness requiring medical treatment, current use of prescription medication that affects BP and non-prescription diuretics, serum creatinine ≥ 1.7 mg/dl in men and ≥ 1.5 mg/dl in women or casual serum glucose ≥ 200 mg/dl, >21 alcoholic drinks/week, current pregnancy or intention of pregnancy **Gender**: 409 women, 782 men **Age** (years): mean (SD) a: 43.4 (6.1), b: 43.2 (6.1) **BMI** (kg/m^2): not stated by group **Weight** (kg): mean (SD) a: 93.4 (14.1), b: 93.6 (13.5) **Baseline comparability**: yes	**Timing of active intervention**: a: minimum of 36 months, contacted 3 times at baseline plus 1 individual visit, then weekly for 14 weeks, every 2 weeks for the next 6 weeks, 3–6 minimodules each year supplemented by participant-initiated contact every 2 weeks b: assessed 7 times (baseline then every 6 months for a minimum of 36 months) **Description of intervention**: a: 4 phases of programme including preintensive phase of 1–4 months' wait before start of treatment when participants advised to prevent weight gain and contacted monthly; intensive phase during initial 14 weeks with mean weight loss goal of ≥ 4.5 kg or to achieve IBW during first 6 months then to maintain weight, reduce calorie intake, count fat intake, increase physical activity to 4–5 times/week for 30–45 minutes per session at 40–55% heart rate reserve, supervised exercise in 4 of 14 initial weekly sessions; transitional phase during weeks 15–26 of treatment with behavioural skills such as individual problem solving, relapse prevention, cognitive reframing and coping imagery; extended phase from week 27 onwards consisted of minimodules including topics such as 'supermarket savvy', 'stress and time management', 'walking across America' b: no treatment received **Allocated**: a: 595, b: 596 **Completed**: a: 547, b: 554 **% Dropout**: a: 8%, b: 7% at 36 months **Assessed**: a: 547, b: 554 at 36 months (weight data only)	**Length of follow-up**: 36–48 months **Outcomes**: weight data, SBP, DBP, mortality, development of hypertension	Numbers in each group assumed for 12- and 24-month data derived from graph, SDs calculated **Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
TONE, 1998	**Randomisation**: 2 × 2 factorial design, 2 overweight participants randomly assigned for every 1 non-overweight participant; stratified by weight and site. Allocation concealment: B(I) **Assessor blinding**: yes **ITT**: no	**Location**: 4 academic health centres, in USA **Period of study**: August 1992–December 1995 **Inclusion criteria**: either gender, stable health, 60–80 years, mean SBP < 145 mmHg, mean DBP < 85 mmHg, taking 1 antihypertensive medication, taking 2 antihypertensive medications if successfully stepped down before randomisation; obese strata involved people with BMI ≥ 27.8 kg/m^2 for men and ≥ 27.3 kg/m^2 for women, independent in their daily living activities, permission of personal physician, ability to alter diet and increase physical activity **Exclusion criteria**: cancer in the past 5 years, type 1 diabetes, severe hypertension, CVD, peripheral vascular disease, psychiatric illness, current or recent (in past 6 months) drug therapy for asthma or chronic obstructive lung disease, corticosteroid therapy for > 1 month, ≥ 4.5 kg involuntary and unexplained weight loss in the past year, serum creatinine > 2 mg/dl, serum potassium > 5.5 mEq/l, haemoglobin < 11g/dl, plasma glucose > 260mg/dl, volume of baseline 24-hour urine specimen < 500 ml, > 14 alcoholic drinks/week, current or planned participation in another intervention study, another member of household was a member of TONE **Gender**: 162 women, 132 men **Age** (years): mean (SD) a: 66 (5), b: 66 (4) **BMI** (kg/m^2) mean (SD): a: 31.0 (2.3), b: 31.3 (2.3) **Baseline comparability**: yes	**Timing of active intervention**: a: median 29 months contacted approximately 45 times (baseline then weekly for first 4 months, then fortnightly for the next 3 months, then monthly) b: median 29 months contacted approximately 10 times (baseline then quarterly) **Description of intervention**: a + b: antihypertensive medications withdrawn 90 days after first group intervention sessions, drug-specific tapering regimens where participants seen weekly and 3 additional fortnightly visits to confirm SBP < 150 mmHg and DBP < 90 mmHg a: the group goal was ≥ 4.5 kg weight loss in 6 months then weight maintenance; individual goals were 5–10% weight loss (depending on baseline BMI) by calorie deficit and increase in physical activity; behavioural therapy based on social action theory for lifestyle change, self-monitoring of calorie intake, eating behaviours and pulse rate; management of eating behaviours, relapse prevention; participants received individual feedback from food intake records and physical activity records, calorie counting of foods, practical advice on purchase and preparation of inexpensive foods available in supermarkets, group practice of safe, low-level exercise b: advised to maintain usual diet and physical activity, speakers led discussion on topics unrelated to blood pressure, CVD or diet **Allocated**: a: 147, b: 147 **Completed**: a: 137, b: unclear at 29 months **% Dropout**: a: 7%, b: unclear at 29 months **Assessed**: a: 133, b: 125 at 12 months; a: 131, b: 122 at 18 months; a: 104, b: 95 at 24 months; a: 60, b: 53 at 30 months	**Length of follow-up**: 29 months (median) **Outcomes**: weight data, adverse events, deaths, cancers, successful withdrawal of antihypertensive medications, MI, cerebrovascular accident	Report of 2 arms of a 4-arm study; author provided mean and SD change in weight at 12, 18, 24 and 30 months postrandomisation **Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Torgerson, 1997	**Randomisation**: 100 sealed envelopes per hospital prepared in random order, no other details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: 2 Swedish outpatient clinics, NAL and Skene county hospitals **Period of study**: before April 1997 **Inclusion criteria**: either gender, 37–60 years, obese (non-surgery arm of SOS study) **Exclusion criteria**: not stated **Gender**: 74 women, 39 men **Age** (years): mean (SD) a: 47.3 (6.7), b: 46.9 (5.8) **BMI** (kg/m^2): mean (SD) a: 40.2 (3.3), b: 40.5 (4.3) **Baseline comparability**: yes	**Timing of active intervention**: a: 2 years, contacted 31 times (baseline then at 1, 2, 4, 6, 8, 12, 13, 14, 16, 18 and 20 weeks, then monthly) b: 2 years, contacted 28 times (baseline then at 1, 2, 4, 6 and 8 weeks, then monthly) **Description of intervention**: a: Modifast PSMF 456–608 kcal/day for 12 weeks then individualised hypocaloric diet of 1200–1400 kcal/day (women) or 1400–1800 kcal/day (men) consisting of 55% CHO, 15–20% protein, 25–30% fat, up to 2 years b: individualised hypocaloric diet of 1200–1400 kcal/day (women) or 1400–1800 kcal/day (men) consisting of 55% CHO, 15–20% protein, 25–30% fat, for 2 years a + b: all participants were asked to complete food records before each 6 monthly visit; all received behavioural support programme which included nutrition education and lifestyle advice, risk avoidance and coping strategies, cooking groups, physical activity groups offered such as swimming and physical training **Allocated**: a: 58, b: 55 **Completed**: a: 43, b: 44 at 2 years **% Dropout**: a: 26%, b: 20% at 2 years **Assessed**: a: 58, b: 55 at 2 years (ITT, LOCF)	**Length of follow-up**: 2 years **Outcomes**: weight data, adverse events, deaths	**Sponsorship**: Swedish Medical Research Council, Novartis Nutrition, Research and Development Committee of Älvsborg County, Sweden

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Tucker, 1991	**Randomisation**: randomly assigned before bariatric surgery, no further details. Allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: possibly	**Location**: USA **Period of study**: before July 1990 **Inclusion criterion**: accepted for bariatric surgery **Exclusion criteria**: not stated **Gender**: 21 women, 11 men (completers only) **Age** (years): mean 40.18 (n = 32) **BMI** (kg/m^2): mean (SD) a: 48.87 (11.24), b: 47.60 (7.14) n = 32 **Baseline comparability**: yes	**Timing of active intervention**: a + b: 2 years, contacted 9 times (baseline then monthly for first 6 months, then at 12 and at 24 months) **Description of intervention**: a + b: all participants watched then discussed a 13-minute videotape before surgery regarding appropriate 2-oz (60 g) meals, food groups and behavioural strategies to avoid nausea and vomiting; all participants received medical assessment monthly for first 6 months postsurgery, then at 12 and 24 months; all participants also received monthly telephone interviews for initial 6 months regarding food intake, physical activity and psychosocial functioning; food diaries completed a: participants received 12 sets of written materials concerning eating and lifestyle mailed to homes every 2 weeks for initial 6 months, and received individual behavioural consultations usually corresponding with medical assessments monthly for first 6 months, then at 12 and 24 months when had opportunity to discuss content of written materials **Allocated**: 60 overall **Completed**: a: 17, b: 15 at 2 years **% Dropout**: 47% overall at 2 years **Assessed**: a: 17, b: 15 at 2 years	**Length of follow-up**: 2 years **Outcome**: weight data	Weight change at 1 and 2 years calculated from actual values, SDs calculated **Sponsorship**: none mentioned

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Viegener, 1990	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Fairleigh Dickinson University and Franklin Delano Roosevelt VA Hospital, New York, USA **Period of study**: before October 1989 **Inclusion criteria**: women, 21–59 years, 25–99% overweight, physician's approval, $125 deposit (with return based on attendance and completion of food diaries) **Exclusion criteria**: obesity-related disorders **Gender**: 85 women **Age** (years): mean (SD) a: 47.10 (7.49), b: 47.13 (8.86) **Weight** (kg): mean (SD) a: 94.58 (12.64), b: 98.57 (15.91) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 12 months, contacted maximum of 39 times (baseline, weekly 2-hour group and individual sessions for first 26 weeks, then opportunity to attend group maintenance sessions twice monthly for 26 weeks) **Description of intervention**: a + b: all participants received behavioural therapy which included self-monitoring, stimulus control, self-reinforcement, cognitive modification and problem solving; all participants were advised to follow a regimen of programmed aerobic exercise with a target goal of 30 minutes/day for 6 days/week; all participants required to purchase a nutrition guide book and to complete daily food diary and daily exercise diary; a: 800 kcal/day diet for 4 days/week and 1200 kcal/day for 3 days/week consisting of ≤ 15% intake from fat on VLCD days and ≤ 25% fat on LCD days; each treatment session included significant focus on nutrition education with sample meals and practical guidance regarding low-fat and low-calorie foods b: 1200 kcal/day balanced deficit diet with 55% CHO, 30% fat and 15% protein **Allocated**: a: 42, b: 43 **Completed**: a: 30, b: 30 at 12 months **% Dropout**: a: 29%, b: 30% at 12 months **Assessed**: a: 30, b: 30 at 12 months	**Length of follow-up**: 52 weeks **Outcomes**: weight data, compliance	**Sponsorship**: part funded by VA Medical Research Service

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wadden, 1989	**Randomisation**: first of 2 cohorts stratified into 3 blocks based on degree overweight; no details regarding second cohort. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: University of Pennsylvania School of Medicine, USA **Period of study**: January 1983–1989 **Inclusion criteria**: Either gender, ≥ 25 kg above IBW (Metropolitan Life Insurance tables) **Exclusion criteria**: recent MI or evidence of cardiac abnormalities, history of cerebrovascular, kidney or liver disease, cancer, type 1 diabetes, severe psychiatric illness, pregnancy, contraindications to treatment by VLCD (assessed at screening), participants agreed not to participate in additional weight loss treatment before follow-up at 1 year post-treatment **Gender**: 76 women (completers only, men excluded from analyses due to small numbers) **Age** (years): mean (SEM) 42.1 (1.1) women completers only (n = 76) **BMI** (kg/m^2): mean (SEM) 39.4 (0.8) women completers only (n = 76) **Baseline comparability**: 2 cohorts significantly different regarding age (43.9 and 39.5)	**Timing of active intervention**: a: 16 weeks, contacted 25 times (90 minutes each week for 16 weeks, then months 1, 2, 3, 6, 9 and 12 post-treatment, 3 years and 5 years post-treatment) b + c: 25 weeks, contacted 39 times (90 minutes each week for 25 weeks, then 11 post-treatment visits every other week for first 2 months, then once a month for next 4 months, then every other month for last 6 months, 3 years and 5 years post-treatment) **Description of intervention**: b: 1000–1200 kcal/day diet of participants' choosing for 25 weeks, taught traditional behavioural methods of weight control which included recording eating behaviour, controlling stimuli related to eating, slowing rate of consumption, increasing lifestyle activity, nutrition education, modifying self-defeating thoughts and emotions, social support, reinforcing changes in eating and exercise behaviour a + c: 1000–1200 kcal/day for month 1, months 2 + 3, 400–500 kcal/day PSMF consisting of 3 servings of lean meat, fish or fowl and to avoid all other food with the exception of non-caloric beverages and bouillon, requested to drink at least 1.5 litres of water/day, daily supplements 3 g each of potassium and sodium chloride, and 800 mg calcium; month 4 refeeding to conventional foods, first fruit and vegetables, then bread and cereal, then fats c: in addition months 5 + 6 prescribed 1000–1200 kcal/day diet, extensive training in behaviour therapy throughout (see b); months 4, 5 + 6 addressed weight maintenance and included relapse prevention training and strategies for handling weight regain a + b + c: encouraged to increase physical activity by walking and using the stairs; diet records kept throughout active treatment; paid $10 for each visit and deposited $40 which was refunded after the 1-year follow-up visit **Allocated**: unclear **Completed**: 68 overall at 12 months post-treatment, 50 overall at 3 years post-treatment and 55 overall at 5 years post-treatment (64–66 months in total) **% Dropout**: unclear **Assessed**: 68 overall at 12 months post-treatment, 50 overall at 3 years post-treatment and 55 overall at 5 years post-treatment	**Length of follow-up**: 64–66 months **Outcomes**: weight data, depression scores, medication use (not by individual treatment group)	2 kg added to all self-reported weights, 3- and 5-year weight outcomes recalculated for participants who had additional weight loss treatment in years 1–5 post-treatment, self-reported weight at time of seeking additional therapy was subtracted from pretreatment weights, significant difference in whole sample from uncorrected changes ($p < 0.002$ at 3 years, $p < 0.005$ at 5 years post-treatment) **Sponsorship**: National Institute of Mental Health Research, MacArthur's Foundation Network on Health Promoting and Disease Preventing Behaviors

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wadden, 1994	**Randomisation**: VLCD group overselected to allow for greater attrition, no further details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Pennsylvania, USA **Period of study**: before February 1993 **Inclusion criteria**: women, ≥ 25 kg overweight, $60 deposits ($300 refunded at 6-monthly intervals) **Exclusion criteria**: MI, cardiac problems, cerebrovascular disease, kidney or liver disease, cancer, type 1 diabetes, bulimia nervosa, psychiatric illness **Gender**: 49 women **Age** (years): mean (SD) a: 42.86 (10.12), b: 36.82 (8.87) **BMI** (kg/m^2): mean (SD) a: 38.80 (5.39), b: 40.01 (5.73) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 18 months, contacted 66 times (baseline then 90-minute small group sessions weekly for first 52 weeks, then fortnightly for weeks 53–78) **Description of intervention**: a + b: all participants received behaviour therapy consisting of keeping an eating record, stimulus control, modifying cognitions, eliciting social support (materials presented in different order for group b for initial 52 weeks); then during weeks 53–78 'upkeep' skills such as weight graphing and biography, preparing low-fat meals, continuing to exercise, relapse prevention, risk avoidance and reversing small weight gains; all participants received same exercise programme consisting of 10–20 minutes 3 times per week at 40–60% maximum heart rate, gradually increased to 20–40 minutes 3–5 times per week at 60–70% maximum heart rate by week 52 a: 1200 kcal/day balanced deficit diet for first 52 weeks, 15–20% protein, 30% fat and remainder CHO, calorie intake then adjusted for weeks 53–78 depending on participant's desired weight change (minimum 1200 kcal/day) b: week 1 advised regarding 1200 kcal/day, weeks 2–17 420 kcal/day liquid formula PSMF (70 g protein, 30 g CHO, 2 g fat) and 2 litres non-caloric fluids daily and avoidance of all other foods; week 18 conventional foods gradually reintroduced to 100 kcal/day by week 23, weeks 24–78 1200 kcal/day **Allocated**: a: 21, b: 28 **Completed**: a: 17, b: 23 at 52 weeks; a: 16, b: 21 at 78 weeks **% Dropout**: a: 24%, b: 25% at 78 weeks **Assessed**: a: 17, b: 23 at 52 weeks; a: 16, b: 21 at 78 weeks	**Length of follow-up**: 78 weeks **Outcomes**: weight data, compliance, QoL	**Sponsorship**: National Institute of Mental Health Research

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wadden, 1998 Wadden, 1998a: aerobic Ex Wadden, 1998b: strength Ex Wadden, 1998c: aerobic + strength Ex	**Randomisation**: 2 cohorts and different centres, no further details. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Syracuse University and University of Pennsylvania, USA **Period of study**: before March 1997 **Inclusion criteria**: women, > 20 kg above IBW (Metropolitan Life Insurance tables) **Exclusion criteria**: medical contraindications, bulimia nervosa, other major psychiatric disturbance, medication known to affect weight **Gender**: 128 women **Age** (years): mean (SD) 40.9 (8.6) overall (n = 118 of 128 assigned) **BMI** (kg/m^2): mean (SD) a: 36.3 (5.3) overall (n = 118 of 128 assigned) **Baseline comparability**: yes	**Timing of active intervention**: a–d: 48 weeks with follow-up at 1 year post-treatment (100 weeks), contacted 40 times (baseline then weekly for initial 28 weeks, then fortnightly for next 20 weeks, then at 100 weeks) **Description of intervention**: a–d: 925 kcal/day/diet for weeks 0–16, then 1200–1500 kcal/day to week 48; 90-minute group cognitive behavioural therapy weekly for 28 weeks then fortnightly for following 20 weeks; a: advised to continue same lifestyle activities and not to increase exercise from baseline b + c + d: 3 × 1-hour supervised exercise training/week for first 28 weeks (non-consecutive days), then 2 sessions/week during weeks 29–48 and 1 home exercise session/week b: step aerobics estimated to expend 300–400 kcal/session c: strength exercise using universal gym of Cybex equipment to expend 150–175 kcal/session, consisted of bench press, latissimus pulldown, chest fly, leg press, leg and arm curls and extensions, sit-ups and back extensions c: 40% aerobic exercise same as group b and 60% strength exercise same as group c, estimated to expend 225–275 kcal/session **Allocated**: not clear **Completed**: a: 21, b: 21, c: 18, d: 17 at 100 weeks **% Dropout**: 40% overall at 100 weeks **Assessed**: a: 21, b: 21, c: 18, d: 17 at 100 weeks	**Length of follow-up**: 100 weeks **Outcome**: weight data	**Sponsorship**: National Institute of Mental Health Research and National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wadden, 2001	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Pennsylvania School of Medicine, USA **Period of study**: before January 2000 **Inclusion criteria**: women, BMI 30–45 kg/m^2 **Exclusion criteria**: physical contraindications including type 1 and 2 diabetes, uncontrolled hypertension (> 140/90 mmHg), history of cerebrovascular, cardiovascular, kidney or liver disease; use of medication known to affect body weight (e.g. steroids), pregnancy or lactation, weight loss of 5 kg and/or use of anorectic agents in previous 6 months, use of SSRIs, MAOIs or other medications contraindicated with use of sibutramine, psychosocial contraindications including current psychotherapy, bulimia nervosa, major depression (> 25 on Beck Depression Inventory), or other psychiatric illness that significantly disrupts daily functioning **Gender**: no details given **Age** (years): mean (SD) 47.2 (9.8) **BMI** (kg/m^2): mean (SD) 37.7 (3.6) **Baseline comparability**: yes	**Timing of active intervention**: 12 months, contacted 11 times (at weeks 0, 2, 4, 8, 12, 16, 20, 24, 32, 40 and 52) groups b + c received 20 additional weekly contacts (weeks 0–20) **Description of intervention**: a + b + c: 10 mg sibutramine increased to 15 mg at week 8 if tolerated, $600 deposit, $150 returned for completing assessments at 6 and 12 months a + b: 1200–1500 kcal/day, 15% energy from protein, 30% fat, 55% CHO, encouraged to increase exercise (mainly walking) to 4–5 sessions/week for 30–40 minutes each session, 28-page healthy eating and activity guide 'On your way to fitness' b + c: additionally given behavioural strategies to achieve goals, daily records of food intake and exercise for first 16 weeks, LEARN programme for weight control, weekly group lifestyle modification sessions for first 20 weeks which included stimulus control, slowing rate of eating, social support, cognitive restructuring c: additionally given portion-controlled diet, 1000 kcal/day for first 16 weeks [(4 servings/day of nutritional supplement 160 kcal, 14 g protein, 20 g CHO, 3 g fat – OPTIFAST)] combined with evening meal of frozen food entrée, serving of fruit and green salad; then weeks 17–20 supplements reduced to 1200–1500 kcal/day of conventional foods from week 20 to week 52 **Allocated**: a: 20, b: 18 c: 17 **Assessed**: a: 19, b: 17, c: 17 at 12 months (conservative 'ITT' in which participants who discontinued treatment were assumed to gain 0.3 kg/month after leaving study) a: 19, b: 17, c: 17 at 12 months (ITT, LOCF) **% Dropout**: a: 35%, b: 28%, c: 0% at 12 months	**Length of follow-up**: 12 months **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP, adverse events, compliance	All main outcome data (excluding weight) were collapsed across 3 groups after analyses revealed no significant differences among groups at end of treatment in changes on any of these variables **Sponsorship**: National Institutes of Health, Novartis Nutrition Co., Knoll Pharmaceutical Co., American Health Publishing Co.

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1984 Wing, 1984a: concentrated behavioural booster sessions Wing, 1984b: spaced behavioural booster sessions	**Randomisation**: rerandomised after 10 weeks to 1 of 2 maintenance strategies from within blocks according to weight loss (< 4.5 kg, 4.5–9 kg, > 9 kg). Allocation concealment: B(I) **Assessor blinding**: yes **ITT**: yes	**Location**: University of Pittsburgh, USA **Period of study**: before September 1983 **Inclusion criteria**: either gender, 20–65 years, ≥ 20% overweight, $85 deposit, $35 non-refundable, $50 refunded at attendance **Exclusion criteria**: currently involved in other weight control programme **Gender**: 42 women, 6 men **Age** (years): mean (SEM) a: 44.79 (1.56), overall **BMI** (kg/m^2): mean 36.45 overall **Baseline comparability**: not stated	**Timing of active intervention**: a + b + a1 + b1: 12 months, contacted 18 times (baseline, weekly for first 10 weeks, then at weeks 14, 23, 24, 25, 26, 34 and 52) a + b + a2 + b2: 12 months, contacted 18 times (baseline, weekly for first 10 weeks then at weeks 14, 18, 22, 26, 34 and 52) **Description of intervention**: a + b: all participants underwent 10 days of pretreatment assessment before randomisation, first 4 days involved food and exercise records, days 5–7 involved individual calorie deficit (initial weight in pounds × 12 – 1000 kcal) using Slender breakfast bars and liquid, days 8–10 participants returned to conventional foods but maintained same prescribed calorie deficit a + b: postrandomisation for initial 10 weeks participants received 60–90-minute weekly sessions involving individual weigh-in, review, food diaries, presentation of a behavioural lesson (energy balance, strategies for increasing exercise, stimulus control, cognitive restructuring, self-reinforcement and relapse prevention) a: to maintain individually prescribed calorie goal (initial weight in pounds × 12 – 1000 kcal) for 5 days/week and < 750 kcal/day for 2 days/week (chosen by participant) for initial 10 weeks, could use low-calorie menu or return to using Slender bars and liquid b: to maintain individually prescribed calorie goal (initial weight in pounds × 12 – 1000 kcal) for 7 days/week a1 + b1: massed booster session at weeks 14, 23, 24, 25, 26 and 34 which included problem-solving techniques, coping strategies, nutrition and exercise topics a2 + b2: spaced booster sessions, content same as for groups a1 and b1 **Allocated**: a: 25, b: 23 **Completed**: a1: 11, b1: 12, a2: 12, b2: 9 at 52 weeks **% Dropout**: 8% overall **Assessed**: a1: 11, b1: 12, a2: 12, b2: 9 at 52 weeks	**Length of follow-up**: 52 weeks **Outcome**: weight data	Mean change in weight calculated by subtracting prerandomisation weight loss from weight change at 12 months, SDs calculated **Sponsorship**: part funded by National Institute of Arthritis, Metabolism and Digestive Diseases

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1985	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Pittsburgh, USA **Period of study**: before February 1984 **Inclusion criteria**: either gender, ≥ 20% above IBW (Metropolitan Life Insurance tables), diabetes treated by diet or oral hypoglycaemics, fasting blood sugar > 140 mg/dl on 2 occasions, or 2-hour value and 1 other value > 200 mg/dl, on OGTT, permission from own physician, $85 deposit with contingencies **Exclusion criteria**: not stated **Gender**: 33 women, 20 men **Age** (years): mean 55.1 (7.28) overall **BMI** (kg/m^2): mean (SD): 34.8 (5.10) overall **Baseline comparability**: not stated	**Timing of active intervention**: a + b: 16 weeks with follow-up at 16 months, contacted 19 times (baseline, then weekly for initial 16 weeks, then at 10 and 16 months) c: 16 weeks with follow-up at 16 months, contacted 7 times (baseline then monthly for initial 16 weeks, then at 10 and 16 months) **Description of intervention**: a + b + c: all participants given calorie intake goal calculated as pretreatment weight (in pounds) × 12 – 1000 with a minimum calorie intake of 1000 kcal/day a: nutrition education condition: basic information on nutrition, exercise and diabetes, weekly discussion of nutrition topic but no specific dietary goals; calorie cost of exercise presented but no group exercise or exercise goals; contingency contracts for attendance c: received same treatment as group a, except met monthly so participants briefly discussed 4 weekly topics at monthly visits b: behaviour modification strategies to change behaviour such as changing environment for eating and changing cognitions, and information given on nutrition, exercise and diabetes; record calories of all food and drink consumed, then monitor sugar intake to < 4 times/week, weekly fibre goal; walking stressed with goal of 100 kcal/week expenditure, group exercise at meetings, charts of group exercise, social support and group competition **Allocated**: not clear, 53 in total **Completed**: 50 overall at 16 months **% Dropout**: 6% overall at 16 months **Assessed**: 50 overall at 16 months	**Length of follow-up**: 16 months **Outcome**: weight data	Only used groups a and b for comparison, no denominators for change in weight **Sponsorship**: part funded by National Institute of Arthritis, Metabolism and Digestive Diseases

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1988a	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: yes **ITT**: no	**Location**: University of Pittsburgh, USA **Period of study**: before May 1988 **Inclusion criteria**: either gender, 30–65 years, type 2 diabetes, > 20% above IBW **Exclusion criteria**: known CHD, on medication which would affect weight loss and/or measurement of heart rate, orthopaedic problems that would limit walking, taking insulin **Gender**: 21 women, 4 men **Age** (years): mean (SD) a: 56.2 (7.5), b: 52.5 (8.9) **BMI** (kg/m^2): mean (SD) a: 38.1 (6.4), b: 37.5 (6.2) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 36 weeks with follow-up at 62 weeks, contacted 28 times (baseline then twice a week for first 10 weeks, then monthly for next 6 months, then at 62 weeks) **Description of intervention**: a + b: all participants received behavioural weight control programme including weigh-in, glucose measurement and behavioural modification lecture (slowing down rate of eating, reducing eating signals in the home, social pressures, preplanning and relapse prevention techniques); 1600 kcal/day diet with daily calorie goal to produce 1 kg week weight loss, reduce fat intake and increase complex CHO intake, food diaries; exercise twice per week as a group and once a week alone, 1 hour per session a: moderate exercise based on walking, gradually increased until participants were walking 3 miles (4.8 km) within the 1-hour session b: low-intensity exercise consisting of light calisthenics and flexibility exercises set to music, designed as placebo exercise **Allocated**: a: 12, b: 13 **Completed**: a: 8, b: 11 at 62 weeks **% Dropout**: a: 33%, b: 15% at 62 weeks **Assessed**: a: 8, b: 11 at 62 weeks	**Length of follow-up**: 62 weeks **Outcome**: weight data	**Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1988b	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: yes **ITT**: no	**Location**: University of Pittsburgh, USA **Period of study**: before May 1988 **Inclusion criteria**: either gender, 30–65 years, type 2 diabetes, > 20% above IBW **Exclusion criteria**: known CHD, on medication that would affect weight loss and/or measurement of heart rate, orthopaedic problems that would limit walking **Gender**: 21 women, 9 men **Age** (years): mean (SD) a: 56.1 (6.4), b: 55.1 (7.2) **BMI** (kg/m^2): mean (SD) a: 38.2 (6.6), b: 37.9 (6.5) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 72 weeks, contacted 53 times (baseline then 3 times/week for first 10 weeks, then weekly for weeks 11–20, then monthly to 72 weeks) **Description of intervention**: a + b: all participants received behavioural weight control programme including weigh-in, glucose measurement and behavioural modification lecture (slowing down rate of eating, reducing eating signals in the home, social pressures, preplanning and relapse prevention techniques); 1600 kcal/day diet with daily calorie goal to produce 1 kg/week weight loss, reduce fat intake and increase complex CHO intake, food diaries; exercise twice per week as a group and once a week alone, 1 hour per session a: walked 3-mile (4.8 km) route with therapist 3 times/week and instructed to exercise additionally once per week on their own b: instructed not to change baseline level of activity, 3 meetings per week were used to provide demonstrations and films of new low-calorie cooking techniques, portion size estimation and role-play; numerous social group activities to control for social aspect of exercise condition received by group a **Allocated**: a: 15, b: 15 **Completed**: a: 13, b: 15 at 72 weeks **% Dropout**: a: 13%, b: 0% at 72 weeks **Assessed**: a: 13, b: 15 at 72 weeks	**Length of follow-up**: 72 weeks **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, HbA_{1c}, fasting plasma glucose	**Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1991	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: University of Pittsburgh School of Medicine, USA **Period of study**: before January 1991 **Inclusion criteria**: either gender, 35–70 years, ≥ 30% above IBW (Metropolitan Life Insurance tables), type 2 diabetes **Exclusion criteria**: liver disease, renal disease, heart disease **Gender**: 26 women, 10 men **Age** (years): mean (SD) a: 51.9 (9.9), b: 50.6 (7.7) (completers only $n = 33$) **BMI** (kg/m^2): mean (SD) a: 38.1 (5.7), b: 37.34 (4.7) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 72 weeks, contacted 25 times (weekly from baseline to week 20, then at weeks 24, 28, 46 and 72) **Description of intervention**: a + b: all participants given instructions to diet, exercise and behaviour modification emphasised in particular; advised to increase walking and given weekly exercise goals starting at 50 kcal/week (the equivalent of a 0.5-mile (0.8-km) walk for a 67.5-kg person) increased to 1000 kcal/week (approximately 10 miles or 16 km walking/week); participants self-monitored their calorie intake and exercise daily throughout the programme, stimulus control techniques, including strategies for removing food cues from the environment, slowing the rate of eating and separating eating from other activities; also taught techniques for modifying cognitions, for relapse prevention and for self-reinforcement; all participants deposited $150 at the start which was earned back weekly for meeting homework goals a: 1000–1500 kcal/day (depending on initial weight) until week 72 unless IBW achieved; information regarding calorie content of protein, CHO and fat given, and participants advised to increase complex CHO and decrease fat intake, food choices unlimited, in line with American Diabetic Association recommendation b: month 1 same as group a, then weeks 5–12, given 400 kcal/day PSMF consisting of lean meat, fish, fowl and choice of Optifast 70 for occasional meals, week 9 other foods gradually reintroduced and calories increased so by week 17 = 1000–1500 kcal/day diet until week 72; participants on insulin started VLCD in hospital where insulin was withdrawn or sharply reduced; vitamin and mineral daily supplements **Allocated**: a: 19, b: 17 **Completed**: a: 16, b: 17 at 72 weeks **% Dropout**: a: 16%, b: 0% at 72 weeks **Assessed**: a: 16, b: 17 at 72 weeks (completer analyses)	**Length of follow-up**: 72 weeks **Outcomes**: weight data, total cholesterol, HDL cholesterol, TGs, HbA_{1c}, fasting plasma glucose, compliance	Author confirmed main study and substudy publications, mean change in risk outcomes at 72 weeks calculated from actual values, SDs also calculated **Sponsorship**: Western Pennsylvania Affiliate of the American Diabetes Association, National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1991b	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: possibly	**Location**: University of Pittsburgh, USA **Period of study**: before January 1990 **Inclusion criteria**: either gender, 30–65 years, ≥ 20% above IBW, fasting glucose ≥ 140 mg/dl, or ≥ 200 mg/dl 2 hours after oral glucose load and 1 other value ≥ 200 mg/dl, spouses 30–70 years, ≥ 15% above IBW; $150 deposit per couple **Exclusion criteria**: not stated **Gender**: 25 women, 18 men **Age** (years): mean (SD) a: 53.6 (7.7), b: 51.2 (7.3) **BMI** (kg/m^2): mean (SD) a: 35.68 (5.76), b: 36.64 (5.77) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 72 weeks, contacted 21 times (baseline then weekly for first 12 weeks, then at weeks 14, 16, 18, 20, 24, 28, 40 and 72) **Description of intervention**: a + b: all participants received behavioural weight loss programme consisting of stimulus control, problem solving, assertion, goal setting and cognitive techniques; participants advised to monitor calorie intake to 1200–1500 kcal/day with a reduction in fat intake and simple CHO and increase in fibre; stepwise goals for walking, with final goal to expend 100 kcal/week; deposit refunded according to weight loss and attendance a: spouse participated in all aspects of programme and no distinction made in treatment between participant and spouse, half of therapy sessions focused on social support and behavioural marital therapy literature, e.g. mutual positive reinforcement **Allocated**: a: 24, b: 25 **Completed**: a: 20, b: 23 at 72 weeks **% Dropout**: a: 17%, b: 8% at 72 weeks **Assessed**: a: 20, b: 23 at 72 weeks	**Length of follow-up**: 72 weeks **Outcomes**: weight data, HbA_{1c}, fasting plasma glucose	**Sponsorship**: parted funded by National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1994	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no details given **ITT**: no	**Location**: University of Pittsburgh, USA **Period of study**: before November 1993 **Inclusion criteria**: either gender, 30–70 years, > 30% or > 18 kg above IBW (based on Metropolitan Life Insurance tables), NIDDM (criteria according to National Diabetes Data Group) **Exclusion criteria**: health problems that would interfere with the use of VLCDs **Gender**: 60 women, 33 men **Age** (years): mean (SD) 51.8 (9.6) **BMI** (kg/m^2): mean (SD) 37.9 (6.3) **Baseline comparability**: yes	**Timing of active intervention**: a + b: 50 weeks plus follow-up 1 year later (102 weeks in total), contacted 52 times (weekly in groups of approximately 15) **Description of intervention**: a + b: all participants kept self-monitoring records which were reviewed at weekly group meetings, along with detailed discussion on nutrition which included focusing on reducing fat content and increasing intake of complex CHO and fibre; exercise that emphasised walking or behavioural techniques that included stimulus control, goal setting and self-monitoring of intake and exercise, preplanning, relapse prevention and modifying cognitions; included role playing and individual discussion and questions; all participants encouraged to increase walking to 2 miles (3.2 km)/day on 5 days/week; all participants kept 3-day food diaries at baseline, 6 months and 12 months; all diabetes medications discontinued at start and algorithm used to determine whether and when to restart medication; all participants given vitamin/mineral supplements throughout study; all participants deposited $150 which was refunded in full for reaching behavioural goals and attending assessments at baseline, 6 months and 50 weeks a: 1000–1200 kcal/day consisting of < 30% energy intake from fat, from baseline to week 50 b: PSMF 500 kcal/day either as liquid supplement (Optifast) or lean meat, fish or fowl for weeks 0–12 and weeks 24–36; other foods gradually reintroduced over following 4 weeks to consume 1000–1200 kcal/day at weeks 13–23 and weeks 37–50 **Allocated**: a: 41, b: 38 **Completed**: a: 38, b: 36 at 102 weeks **% Dropout**: a: 21%, b: 20% at 102 weeks **Assessed**: a: 37, b:36 at 102 weeks (completer analysis; 1 subject in group a excluded from analyses due to gastric bypass operation before follow-up visit)	**Length of follow-up**: 102 weeks **Outcomes**: weight data, medication use	Author confirmed study and substudy reports **Sponsorship**: National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1998	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: yes **ITT**: yes	**Location**: University of Pittsburgh, USA **Period of study**: before July 1997 **Inclusion criteria**: either gender, 40–55 years, non-diabetic (confirmed by OGTT), 1 or 2 biological parents with type 2 diabetes, 30–100% above IBW **Exclusion criterion**: diabetes **Gender**: 122 women, 32 men **Age** (years): mean (SD) a: 45.0 (4.7), b: 46.4 (4.5), c: 46.3 (3.8), d: 45.3 (4.9) **BMI** (kg/m^2): mean (SD) a: 36.1 (4.1), b: 36.0 (3.7), c: 35.7 (4.1), d: 36.0 (5.4) **Baseline comparability**: yes	**Timing of active intervention**: a–c: 2 years, contacted approximately 52 times (baseline, weekly for first 6 months, then every 2 weeks for next 6 months, then 2 × 6-week course during 2nd year) d: contacted at baseline, 6 months, 1 year and 2 years **Description of intervention**: a: 800–1000 kcal/day weeks 1–8, then adjusted to 1200–1500 kcal/day by week 16, food diaries reviewed and feedback given, meal plans and shopping lists, behavioural or nutritional topic given at each session b: exercise behaviour topic each week, 50–60 minute walk with therapist at each weekly meeting (second supervised walk available each week for weeks 1–10), gradually increased exercise to estimated calorie expenditure of 1500 kcal/week [e.g. 3 miles (5 km) brisk walking on 5 days/week], other activities periodically introduced to the participants such as aerobics and line dancing c: same diet as group a and same exercise as group b (equivalent to half time for each) d: participants received LEARN behavioural manual with information on healthy eating, exercise and behavioural strategies; participants encouraged to lose weight and exercise on their own, only participated in the assessments **Allocated**: a: 37, b: 37, c: 40, d: 40 **Completed**: a: 33, b: 28, c: 30, d: 29, at 1 year; a: 35, b: 31, c: 32, d: 31 at 2 years **% Dropout**: a: 5%, b: 16%, c: 20%, d: 23% at 2 years **Assessed**: a: 33, b: 28, c: 30, d: 29 at 1 year; a: 35, b: 31, c: 32, d: 31 at 2 years	**Length of follow-up**: 2 years **Outcomes**: weight data, total cholesterol, HDL cholesterol, LDL cholesterol, TGs, SBP, DBP, HbA_{1c}, fasting plasma glucose, development of type 2 diabetes, compliance	Author confirmed main study and substudy reports **Sponsorship**: National Institutes of Health, Obesity/Nutrition Research Center, General Clinical Research Center

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wing, 1999	**Randomisation**: allocation concealment: B(I) **Assessor blinding**: no **ITT**: yes	**Location**: University of Pittsburgh, USA **Period of study**: before July 1998 **Inclusion criteria**: either gender, 25–55 years, 6.8–31.8 kg above IBW, generally good health **Exclusion criteria**: not stated **Gender**: 84 women, 82 men **Age** (years): mean (SD) a: 41.8 (9.2), b: 43.5 (7.8), c: 40.6 (8.3), d: 43.8 (8.6) **BMI** (kg/m^2): mean (SD) a: 30.6 (3.7), b: 31.8 (3.1), c: 32.1 (3.7), d: 30.3 (4.0) **Baseline comparability**: yes	**Timing of active intervention**: a–d: 16 weeks with follow-up at 16 months, contacted 18 times (baseline then weekly for initial 16 weeks, then at 16 months) **Description of intervention**: a–d: all participants advised to eat ≤ 1000 kcal/day with 22 g of fat if weighed <90.7 kg at baseline, or ≤ 1500 kcal/day with 33 g of fat if baseline > 90.7 kg; given grocery lists and meal plans weekly during initial 16 weeks, exercise prescribed in gradual increments up to 100 kcal/week expenditure [equivalent to walking for 2 miles (3.2 km) 5 days/week], food and exercise diaries completed during 16 weeks, behavioural lessons focused on problem solving, assertion, stimulus control, developing social support, dealing with high-risk situations, cognition and maintenance strategies, a: recruited alone with no effort to increase communication in group, $25 deposit refunded for attending each follow-up at months 4 and 10 b: participants assigned to a team of 4 members and given social support intervention involving intragroup activities such as calling other members of their team to provide support, group assignments and an intragroup competition with team who had largest number of its members retaining their weight loss in full from months 4–7 and months 4–10, jackpot consisted of $25 of each participant's deposit c: recruited with friends, but relationships among and between teams not acknowledged, identical programme to group a d: recruited with 4 friends who became natural team and received same social support as group b **Allocated**: a: 38, b: 48, c: 40, d: 40 **Completed**: 90 overall at 16 months **% Dropout**: 46% overall at 16 months **Assessed**: a: 38, b: 48, c: 40, d: 40 (ITT, with dropouts assumed to have returned to baseline weights)	**Length of follow-up**: 16 months **Outcome**: weight data	Groups a + b and groups c + d assessed in aggregate **Sponsorship**: National Health, Lung and Blood Institute

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wood, 1988	**Randomisation**: 4 cohorts, sealed envelopes, no further details, at end of year participants in 2 active treatment groups were randomly assigned within each condition to 2 maintenance conditions. Allocation concealment: B(I) **Assessor blinding**: no in year 1, blinded in year 2 **ITT**: no	**Location**: Stanford University, California, USA **Period of study**: before December 1987 **Inclusion criteria**: men, 30–59 years, 120–160% IBW, no regular exercise for past 3 months, non-smokers, clinically healthy, resting clinic BP < 160/100 mmHg, plasma cholesterol < 8.28 mmol/l, plasma TGs < 5.65 mmol/l, average < 4 alcoholic drinks/day, expected to reside in Stanford area for at least 1 year, normal ECG during grade treadmill test **Exclusion criteria**: orthopaedic limitations, medications known to affect BP or plasma lipids **Gender**: 155 men **Age** (years): mean (SD) a1: 44.2 (8.2), b1: 44.1 (7.8), c: 45.2 (7.2) for 131 participants assessed **Weight** (kg): mean (SD) a1: 93.0 (8.8), b1: 94.1 (8.6), c: 95.4 (10.6) for 131 participants assessed **Baseline comparability**: yes	**Timing of active intervention**: a1 + b1: 12 months, no details of frequency of contact c: contacted 3 times during 12 months (baseline then 7 and 12 months) a2 + b2: monthly mailings during year 2, telephone contact of 5–10 minutes each during months 13, 14 and 15 and at months 18, 21 and 24 a3 + b3: contacted twice (at 18 and 24 months) **Description of intervention**: a1: baseline 7-day diet recall and fat body mass used to provide individual counselling including behavioural strategies, to reduce calorie intake to produce gradual weight loss and to lose one-third of body fat (assumed a reduction of 7762 kcal = loss of 1 kg adipose tissue); no change in nutrient composition, requested to remain sedentary, included weight stabilisation for last 6 weeks b1: received supervised exercise training session to promote increase in calorie expenditure and body fat loss of one-third, consisting of 1 hour 3 times/week, including calisthenics, walking, jogging and principally running at 60–80% peak heart rate (according to treadmill test results), advised to increase routine physical activity plus 2 more sessions/week unsupervised exercise; activity logs kept and advised not to change diet including composition, weight stabilisation last 6 weeks c: participants advised not to make any changes in diet including composition, exercise or body weight, offered weight loss programme of diet and exercise at end of the study a2 + b2: participants received telephone contact during months 13, 14 and 15 and at months 18, 21 and 24 to answer any questions relevant to original weight loss treatment; 7-day food recall and physical activity recall questionnaire completed at end of year 1 and end of year 2, monthly mail contact to prevent relapses to unwanted behaviour, included supportive letter, brief self-scored assessment of particular problem area specific to original weight control treatment group and list of coping	**Length of follow-up**: 2 years **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP	First year data only used **Sponsorship**: National Heart, Lung and Blood Institute, National Institutes of Health

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
			suggestions, option of continuing with self-monitoring logs, given written information on the weight control method participants had not received in year 1, encouraged to obtain support from members of original treatment group a3 + b3: did not receive any mailings or telephone contact during year 2, assessed at 18 months and 24 months **Allocated**: a1: 51, b1: 52, c: 52 at baseline; a2: 24, a3: 20, b2: 24, b3: 22 **Completed**: a1: 49, b1: 51, c: 49 at 1 year; a2: 20, a3: 16, b2: 21, b3: 15 at 2 years **% Dropout**: a1: 4%, b1: 2%, c: 6%, at 1 year; a2: 17%, a3: 20%, b2: 13%, b3: 32% at 2 years **Assessed**: a1: 42, b1: 47, c: 42 at 1 year; a2: 20, a3: 16, b2: 21, b3: 15 at 2 years		

continued

TABLE 23 *Included non-drug studies (cont'd)*

Study ID	Methods	Participants	Interventions	Outcomes	Notes
Wood, 1991 Wood, 1991a: women Wood, 1991b: men	**Randomisation**: 3 cohorts, stratified by gender. Allocation concealment: B(I) **Assessor blinding**: no **ITT**: no	**Location**: Stanford University, California, USA **Period of study**: before 1991 **Inclusion criteria**: either gender, 25–49 years, 120–150% IBW, BMI 28–34 kg/m^2 men, 24–30 kg/m^2 women, non-smokers, sedentary (exercise less than twice per week, < 30 minutes each time), resting BP < 160/95 mmHg, plasma cholesterol < 6.72 mmol/l, plasma TGs < 5.65 mmol/l, average <4 alcoholic drinks/day, generally good health **Exclusion criteria**: medication known to affect BP or lipid metabolism, pregnancy, lactating or taking oral contraceptive in past 6 months or planning pregnancy in subsequent 2 years **Gender**: 132 women, 132 men **Age** (years): mean (SD) 39.1 (6.4) women, 40.3 (6.3) men **BMI** (kg/m^2): mean (SD) 27.9 (2.2) women, 30.7 (2.2) men **Baseline comparability**: significant difference in DBP in men in groups a + b vs c (control) ($p < 0.001$), significant difference in total cholesterol in females group a vs control ($p \leq 0.01$), group b vs control ($p \leq 0.05$), and LDL cholesterol in females group a and group b vs control ($p \leq 0.05$)	**Timing of active intervention**: a: 1 year, contacted 25 times (baseline, weekly for first 3 months, then every other week for 3 months, then monthly) b: 1 year, contacted 181 times (baseline, 3 times/week for 1 year plus weekly for first 3 months, then every other week for 3 months, then monthly) c: contacted twice, at baseline and at 1 year **Description of intervention**: a: National Cholesterol Education Program (NCEP) step 1 diet consisting of 55% CHO, 30% fat (with saturated fat ≤ 10%) dietary cholesterol < 300 mg/day, calorie reduction, no change in exercise b: received identical diet to group a and aerobic exercise (brisk walking or jogging) at 60–80% maximum heart rate initially for 25 minutes 3 times/week increasing to 45 minutes 3 times/week by month 4, monthly activity logs kept c: instructed to maintain usual diet and exercise patterns **Allocated**: a: 87, b: 90, c: 87 **Completed**: 237 overall at 1 year **% Dropout**: a: 10%, b: 18%, c: 10% at 1 year **Assessed**: a: 71, b: 81, c: 79 at 1 year	**Length of follow-up**: 1 year **Outcomes**: weight data, total cholesterol, LDL cholesterol, HDL cholesterol, TGs, SBP, DBP	Outcome data presented by gender **Sponsorship**: National Institutes of Health

BCDD, balanced calorie deficit diet.

Appendix 9

Characteristics of ongoing and recently completed RCTs not included in this review

Trial name or title	Participants	Interventions	Main outcomes	Date	Contact information	Notes
CHARMONT study Germany	47 participants, 18–65 years, BMI ≥ 40 kg/m^2, no significant difference between baseline values	Diet plus aqua-fitness plus behaviour therapy plus sibutramine 10 mg/day vs gastric banding	BMI, % overweight, BP, HbA_{1c}%, total cholesterol, LDL cholesterol, HDL cholesterol, plasma glucose, economic costs, QoL, post-operative complications	Ongoing 2000	Dr S Klaua, Medizinische Universitäts-Poliklinik, Charité, Humboldt-Universität Luisenstrasse 11–13a, D-10117 Berlin, Germany	Preliminary 12-month data available for 15 conservatively treated participants and 12 surgically treated participants: reduction of overweight 35% vs 48% (conservative vs surgical), all parameters of metabolism improved significantly in conservative group except BP, which increased by 3 mmHg vs decrease of –32 mmHg in surgical group, HbA_{1c} –24% vs –16% (conservative vs surgical)
Diabetes Prevention Program (DPP) 27 centres in USA	3234 participants, both genders, ≥ 25 years, BMI ≥ 24 kg/m^2 (≥ 22 kg/m^2 if Asian), IGT plus fasting plasma glucose of 5.3–6.9 mmol/l (or ≤ 6.9mmol/l if American Indians)	Intensive lifestyle modification vs standard care plus metformin vs standard care plus placebo	Development of diabetes, defects in insulin sensitivity and secretion, development and/or progression of vascular diseases and cardiovascular risk factors, weight	Completed	Diabetes Prevention Program Coordinating Center, George Washington University, 6110 Executive Boulevard, Suite 750, Rockville, MD 20852, USA dppmail@biostst.bsc.gwu.edu	Diabetes Prevention Program Group. The Diabetes Prevention Program. Design and methods for a clinical trial in the prevention of type 2 diabetes. *Diabetes Care* 1999;**22**:623–34. Diabetes Prevention Program Group. The Diabetes Prevention Program. Baseline characteristics of the randomized cohort. *Diabetes Care* 2000;**23**:1619–29. Diabetes Prevention Program Research Group. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med* 2002; **346**:393–403.
Gale Metformin to prevent weight gain in type 2 diabetic patients starting insulin, UK	Participants with type 2 diabetes, ≤ 75 years	Metformin vs placebo	Weight, waist–hip ratio, glycated haemoglobin, serum lipids, participant satisfaction	Ongoing 1998	Professor EA Gale, Department of Metabolic Medicine, Southmead Hospital, Southmead Road, Bristol BS10 5NB, UK	Information obtained from UK National Research Register. URL:http://www.update-software.com/National/

continued

Trial name or title	Participants	Interventions	Main outcomes	Date	Contact information	Notes
Heshka Self-help weight loss vs a structured commercial programme, 6 centres in USA	423 participants, both genders, 18–65 years, BMI 27–40 kg/m^2, not diabetics	Self-help programme and two 20-minute sessions with nutritionist vs Weight Watchers programme	Weight, waist circumference	Ongoing 2000	Dr S Heshka, New York Obesity Research Center, St Luke's/Roosevelt Hospital Center, 1090 Amsterdam Avenue, 14C, NY 10025, USA	26-week results in: Heshka S, Greenway F, Anderson JW, Atkinson RL, Hill JO, Phinney SD, *et al*. Self-help weight loss versus a structured commercial program after 26 weeks: a randomized controlled study. *Am J Med* 2000;**109**:282–7.
Kelley Orlistat in people with insulin-treated type 2 diabetes, USA	550 participants, 40–65 years, BMI 28–43 kg/m^2, type 2 diabetes, HBA_{1c} 7.5–12.0%, stable dose of insulin	Orlistat 120 mg three times daily and low-fat diet vs placebo and diet	Weight, use of diabetes medications, glycaemic control, lipids, BP, adverse events	Completed	Dr DE Kelley, 3459 Fifth Avenue, University of Pittsburgh Montefiore Hospital, N809 Pittsburgh, PA 15213, USA kelley@msx.dept-med.pitt.edu	Kelley, Bray GA, Pi-Sunyer FX, Klein S, Hill J, Miles J, *et al*. Clinical efficacy of orlistat therapy in overweight and obese patients with insulin-treated type 2 diabetes. *Diabetes Care* 2002;**25**:1033–41.
Keyserling Diabetes management programme for African–American women with type 2 diabetes, 7 practices in North Carolina, USA	200 African–American women with type 2 diabetes for ≥ 3 years	Clinic and community New Leaf Programme (diet, exercise and behaviour therapy) vs clinic New Leaf Programme vs control	Weight, glycated haemoglobin, serum lipids	Ongoing 2000	Dr TC Keyserling, CB# 8140, 1700 Airport Road, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA tkeyserling@med.unc.edu	Methods in: Keyserling TC, Ammerman AS, Samuel-Hodge CD, Ingram AF, Skelly AH, Elasy TA, *et al*. A diabetes management program for African American women with type 2 diabetes. *Diabetes Educ* 2000; **26**:796–804.
Look AHEAD (Action for Health in Diabetes) Multicentre trial, USA	5000 participants, both genders, 45–75 years, BMI ≥ 25 kg/m^2, type 2 diabetes	Intensive diet, exercise and behaviour therapy, ongoing contact and weight loss medications vs diabetes support and education	Primary outcome: aggregate occurrence of severe cardiovascular events over 11.5 years; secondary outcome: vascular events, weight	Ongoing 2001	http://show.phs.wfubmc.edu/	

continued

Trial name or title	Participants	Interventions	Main outcomes	Date	Contact information	Notes
McKeigue Development and validation of a weight losing dietary intervention to reduce the risk of diabetes and CHD in South Asians, UK	72 South Asians and Europeans, both genders, 35–59 years, central obesity	Individually tailored low-fat, low-energy diet based on computer assessment vs no intervention	Weight, fat distribution, insulin response to glucose load	Unclear	Dr P McKeigue, Epidemiology, Sciences Department, Keppel Street, London WC1E 7HT, UK	Information obtained from UK National Research Register. URL:http://www.update-software.com/National/
McMahon Sibutramine in people with well-controlled hypertension, USA	220 participants, both genders, ≥ 18 years, BMI ≥ 27 kg/m^2 and < 40 kg/m^2, well-controlled hypertension on angiotensin-converting enzyme inhibitors	Sibutramine 20 mg daily and weight reduction advice vs placebo and same advice	BMI, weight, waist–hip ratio, BP, lipids, adverse events	Completed	Dr FG McMahon, Clinical Research Center, 147 South Liberty Street, New Orleans, LA 70112, USA crcadmin@acadiacom.net	McMahon FG, Weinstein SP, Rowqe E, Ernst KR, Johnson F, Fujioka K, *et al*. Sibutramine is safe and effective for weight loss in obese patients whose hypertension is well controlled with angiotensin-converting enzyme inhibitors. *J Hum Hypertens* 2002; **16**:5–11.
Meneilly Acarbose in elderly patients with diabetes, 5 centres in North America	Older people with diet-controlled diabetes	Acarbose vs placebo	Diabetic control, weight	Ongoing 2000	DR GS Meneilly, Room S169, Vancouver Hospital and Health Sciences Centre, UBC Site, 2211 Wesbrook Mall, Vancouver BC, Canada V6T 2B5 gmeneill@vanhosp.bc.ca	Subgroup data published as: Meneilly GS, Ryan EA, Radziuk J, Lau DC, Yale J-F, Morais J, *et al*. Effect of acarbose on insulin sensitivity in elderly patients with diabetes. *Diabetes Care* 2000;**23**:1162–7.

continued

Trial name or title	Participants	Interventions	Main outcomes	Date	Contact information	Notes
Miles Orlistat in people with type 2 diabetes treated with metformin, USA	516 participants, 40–65 years, BMI 28–43 kg/m^2, type 2 diabetes, HBA_{1c} 7.5–12.0%, taking metformin with or without sulfonylureas	Orlistat 120 mg three times daily and 600 kcal/day deficit diet vs placebo and diet	Weight, use of diabetes medications, glycaemic control, lipids, BP, adverse events	Completed	Dr JM Miles, Division of Endocrinology and Metabolism, Mayo Clinic, 200 First St SW, Rochester, MN 55905, USA miles.john@mayo.edu	Miles JM, Leiter L, Hollander P, Wadden T, Anderson JW, Doyle M, *et al*. Effect of orlistat in overweight and obese patients treated with metformin. *Diabetes Care* 2002;**25**:1123–8.
STOP-NIDDM Multicentre, international trial	1418 participants, both genders, 40–70 years, BMI 24–40 kg/m^2, impaired glucose tolerance (old WHO criteria)	Acarbose 100 mg three times daily vs placebo	Development of type 2 diabetes, cardiovascular events, BP, lipids, weight	Completed	Dr J-L Chiasson, Research Group on Diabetes and Metabolic Regulation, Research Center, CHUM, Campus Hôtel-Dieu, 3830 Rue St Urbain, Montreal, Quebec H2W 1T8, Canada, jean.lois.chiasson@umontreal.ca	Design and baseline data in: The STOP-NIDDM trial. An international study on the efficacy of an α-glucosidase inhibitor to prevent type 2 diabetes in a population with impaired glucose tolerance: rationale, design, and preliminary screening data. *Diabetes Care* 1998;**21**:1720–5. Chiasson J-L, Josse RG, Gomis R, Hanefeld, Karasik A, Laakso M, for the STOP-NIDDM Trial Research Group. Acarbose for prevention of type 2 diabetes mellitus: the STOP-NIDDM randomised trial. *Lancet* 2002; **359**:2072–7.
XENDOS Multicentre trial, Sweden	Both genders, 30–60 years, BMI ≥ 30 kg/m^2, non-diabetic, ≥ 10% had IGT	Orlistat 120 mg three times daily and 800 kcal/day deficit diet vs diet and placebo	Development of type 2 diabetes	Completed	Professor L Sjöström, SOS Secretariat, Vita Stråket 15, Sahlgrenska University Hospital, 413 45 Göteborg, Sweden lars.sjostrom@medfak.gu.se	Torgerson JS, Arlinger K, Käppi M, Sjöström L. Principles for enhanced recruitment of subjects in a large clinical trial: the XENDOS study experience. *Control Clin Trials* 2001;**22**:515–25. Study reviewed in: Scheen AJ. Prévention du diabète de type 2 chez le sujet obèse: premiers résultats avec l'orlistat dans l'étude XENDOS. *Rev Med Liege* 2002; **57**:617–21.

Appendix 10

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Appendix 11

Table of quality assessment of included RCTs

	Quality of random allocation concealment	Description of withdrawals and dropouts	Intention to treat?	Participants blinded to treatment status?	Healthcare providers blinded to treatment status?	Outcome assessors blinded to treatment status?
Orlistat						
Broom, 2001a	B(I)	A	C	B(II)	B(II)	B(I)
Broom, 2001b	B(I)	A	C	B(II)	B(II)	B(I)
Davidson, 1999	B(I)	A	C	B(II)	B(II)	B(I)
Finer, 2000	A	A	C	B(II)	B(II)	A(I)
Hauptman, 2000	A	A	C	B(II)	B(II)	B(I)
Hill, 1999	B(I)	A	C	B(II)	B(II)	B(I)
Hollander, 1998	A	A	B	B(II)	B(II)	A(I)
Lindgarde, 2000	B(I)	A	B	B(II)	B(II)	B(I)
Rossner, 2000	B(I)	A	C	B(II)	B(II)	B(I)
Sjöström, 1998	A	A	C	B(II)	B(II)	B(I)
Sibutramine						
Apfelbaum, 1999	B(I)	A	C	A(I)	A(I)	B(I)
McMahon, 2000	B(I)	A	C	A(II)	A(II)	B(I)
Smith, 2001	B(I)	A	C	A(I)	A(I)	B(I)
STORM, 2000	A	A	A	A(I)	A(I)	B(I)
SSRIs						
Bitsch, 1987	A	B(I)	A	A(I)	A(I)	A(I)
Breum, 1995	B(I)	A	C	A(I)	A(I)	B(I)
Goldstein, 1994	B(I)	B(I)	C	A(I)	A(I)	A(I)
O'Kane, 1994	B(I)	A	C	A(II)	A(II)	B(I)
Wadden, 1995	B(I)	A	A	A(II)	A(II)	B(I)
Metformin						
BIGPRO1, 1996	A	A	A	A(I)	A(I)	B(I)
Teupe, 1991	B(I)	A	C	C	C	C
UKPDS, 1998	A	B(I)	B	C	C	B(I)
Acarbose						
Chiasson, 1994	B(I)	B(I)	C	A(II)	A(II)	B(I)
All non-drug interventions						
Black, 1984	B(I)	B(I)	C	C	C	C
Blonk, 1994	B(I)	A	A	C	C	C
Cohen, 1991	B(I)	A	B	C	C	B(I)
Cousins, 1992	B(I)	B(I)	C	C	C	C
de Waard, 1993	B(I)	B(I)	C	C	C	C
DISH, 1985	B(I)	B(I)	B	C	C	C
FDPS, 2001	B(I)	A	C	C	C	A(II)
Foreyt, 1993	B(II)	B(I)	C	C	C	C
Frey-Hewitt, 1990	B(I)	A	C	C	C	C
Hakala, 1989	B(I)	B(I)	B	C	C	C
Hakala, 1993	B(I)	B(I)	A	C	C	C
Hankey, 2001	B(I)	A	A	C	C	C
HOT, 1999	B(I)	A	B	C	C	C
HPT, 1990	B(I)	B(I)	A	C	C	A(I)
Jalkanen, 1991	B(I)	B(I)	B	C	C	C
Jeffery, 1993	B(I)	B(I)	B	C	C	C

continued

	Quality of random allocation concealment	Description of withdrawals and dropouts	Intention to treat?	Participants blinded to treatment status?	Healthcare providers blinded to treatment status?	Outcome assessors blinded to treatment status?
Jones, 1986	B(I)	B(I)	C	C	C	C
Kaplan, 1987	B(I)	B(I)	B	C	C	B(I)
Karvetti, 1992	B(I)	A	B	C	C	C
Laitinen, 1993	B(I)	B(I)	B	C	C	B(I)
Lindahl, 1999	B(I)	A	C	C	C	B(I)
Long, 1983	B(I)	B(I)	C	A(II)	C	C
Murphy, 1982	B(I)	B(I)	A	C	C	C
Narayan, 1998	B(I)	A	C	C	C	C
ODES, 1995	A	A	C	C	C	C
Ost, 1976	B(I)	A	A	C	C	C
Pavlou, 1989a	B(I)	B(I)	B	C	C	C
Pavlou, 1989b	B(I)	B(I)	B	C	C	C
Pearce, 1981	B(I)	B(II)	C	C	C	B(I)
Phenix, 1991	B(I)	B(I)	A	C	C	C
Pritchard, 1997	B(II)	A	A	C	C	C
Pritchard, 1999	B(II)	B(I)	A	C	C	C
Rosenthal, 1980	B(I)	B(I)	A	C	C	C
Shah, 1996	B(I)	A	C	C	C	C
Sikand, 1988	B(I)	B(I)	A	C	C	C
Simonen, 2000	B(I)	C	A	C	C	C
Stenius-Aarniala, 2000	B(I)	A	A	C	C	C
Straw, 1983	B(I)	A	C	C	C	C
Swinburn, 2001	C	B(I)	C	C	C	C
TAIM, 1992	A	A	C	C	C	C
TOHP I, 1992	A	B(I)	B	C	C	C
TOHP II, 1997	A	B(I)	B	C	C	A(II)
TONE, 1998	B(I)	B(I)	C	C	C	A(I)
Torgerson, 1997	B(I)	A	A	C	C	C
Tucker, 1991	B(I)	A	B	C	C	B(I)
Viegener, 1990	B(I)	B(I)	C	C	C	C
Wadden, 1989	B(I)	A	C	C	C	C
Wadden, 1994	B(I)	A	A	C	C	C
Wadden, 1998	B(I)	A	C	C	C	C
Wadden, 2001	B(I)	A	A	C	C	C
Wing, 1984	B(I)	B(I)	A	C	C	C
Wing, 1985	B(I)	B(I)	A	C	C	C
Wing, 1988a	B(I)	B(I)	C	C	C	A(I)
Wing, 1988b	B(I)	B(I)	C	C	C	A(I)
Wing, 1991	B(I)	B(I)	B	C	C	B(I)
Wing, 1991b	B(I)	B(I)	C	C	C	C
Wing, 1994	B(I)	B(I)	C	C	C	B(I)
Wing, 1998	B(I)	B(I)	A	C	C	B(I)
Wing, 1999	B(I)	B(I)	A	C	C	C
Wood, 1988	B(I)	A	C	C	C	C
Wood, 1991	B(I)	A	C	C	C	C

Appendix 12

Summary table of weight loss results

The table shows summary estimates for weight changes from RCTs of weight reduction (WMDs and 95% CI, in kg).

Comparison	12 months	18 months	24 months	30 months	36 months	48 months	60 months
Drug trials							
Orlistat added to diet	–3.01* (–3.48 to –2.54)		–3.26* (–4.15 to –2.37)				
Sibutramine added to diet	–4.12* (–4.97 to –3.26)						
SSRIs added to diet	–0.33 (–1.49 to 0.82)						
Metformin added to diet	–1.09 (–2.29 to 0.11)		–0.50 (–4.02 to 3.02)				–0.12 (–1.13 to 0.89)
Acarbose added to diet	–0.79* (–1.53 to –0.05)						
Diet trials							
600 kcal/day deficit or low-fat diet compared with control	–5.31* (–5.86 to –4.77)	–1.15 (–2.76 to 0.45)	–2.35* (–3.56 to –1.15)		–3.55* (–4.54 to –2.55)		–0.20 (–2.03 to 1.63)
LCD compared with control	–6.25* (–9.05 to –3.45)		–7.00* (–10.99 to –3.01)		–6.10* (–10.71 to –1.49)		
VLCD compared with control	–13.40* (–18.43 to –8.37)						
LCD compared with 600 kcal/day or low-fat diet	1.63 (–1.26 to 4.52)						
VLCD compared with 600 kcal/day or low-fat diet			–4.70 (–11.79 to 2.39)				
VLCD compared with LCD	–0.15 (–2.73 to 2.43)	–1.13 (–5.32 to 3.06)					
PSMF compared with LCD	–3.57 (–7.36 to 0.22)	0.69 (–1.58 to 2.96)	–2.17 (–4.88 to 0.54)		–1.51 (–5.43 to 2.41)		0.20 (–5.68 to 6.08)
PSMF compared with VLCD		2.73 (0.07 to 5.39)					

continued

Comparison	12 months	18 months	24 months	30 months	36 months	48 months	60 months
Trials of diet, exercise or behaviour therapy combinations							
Diet and exercise compared with control	–4.78* (–5.41 to –4.16)		–2.70* (–3.60 to –1.80)				
Diet and behaviour therapy compared with control	–7.21* (–8.68 to –5.75)		–1.80 (–4.77 to 1.17)				
Adding diet and behaviour therapy to surgery	–10.03 (–22.29 to 2.23)		–10.56 (–23.17 to 2.05)				
Diet, exercise and behaviour therapy compared with control	–4.00* (–4.46 to –3.54)	–3.40* (–3.84 to –2.97)	–3.00* (–3.59 to –2.40)	–4.68* (–6.08 to –3.28)	–2.00* (–2.66 to –1.34)		
Family compared with individual therapy	–2.96* (–5.31 to –0.60)	–1.08 (–3.04 to 0.87)	–5.61* (–10.98 to –0.24)			–1.55 (–7.88 to 4.78)	
Group compared with individual therapy	1.59 (–1.81 to 5.00)	0.74 (–4.21 to 5.69)	8.10 (2.19 to 14.01)				4.40 (–3.51 to 12.31)
Adding exercise to diet	–1.95* (–3.22 to –0.68)	–7.63* (–10.33 to –4.92)			–8,22* (–15.27 to –1.16)		
Adding behaviour therapy to diet	–7.67* (–11.97 to –3.36)	–4.18* (–8.32 to –0.04)			–2.91 (–8.60 to 2.78)		1.90 (–3.76 to 7.56)
Adding exercise to diet and behaviour therapy	–3.02* (–4.94 to –1.11)		–2.16* (–4.20 to –0.12)				
Adding exercise and behaviour therapy to diet	–0.67 (–4.22 to 2.88)	–2.06 (–5.57 to 1.45)	–1.40 (–5.01 to 2.21)				
Behaviour therapy added to LCD and exercise	–10.69* (–14.22 to –7.16)						

* Significant difference.

Appendix 13

Statistical methods for estimation of standard deviation of change in weight

Introduction

The following provides an equation for deriving the standard deviation for the change in weight from baseline given the absolute value of the mean change in weight since baseline.

Method

Summary statistics were provided from a series of trials representing 62 trial–treatment combinations, of which four had no data. A linear regression was made of the standard deviation of the mean change on the absolute mean change for weight.

Results

Of the 58 trial–treatment combinations, 43 reported both the mean change and the standard error of the mean change in body weight from baseline to the end of the first treatment phase, while eight only reported the mean and seven reported neither. The plot of standard deviation by the absolute value of the mean change (*Figure 250*) shows two points where both the absolute mean and the standard deviation of the mean are close to zero; both were excluded from the linear regression, giving $n = 41$. The linear regression was also repeated with observation 13, which was influential,

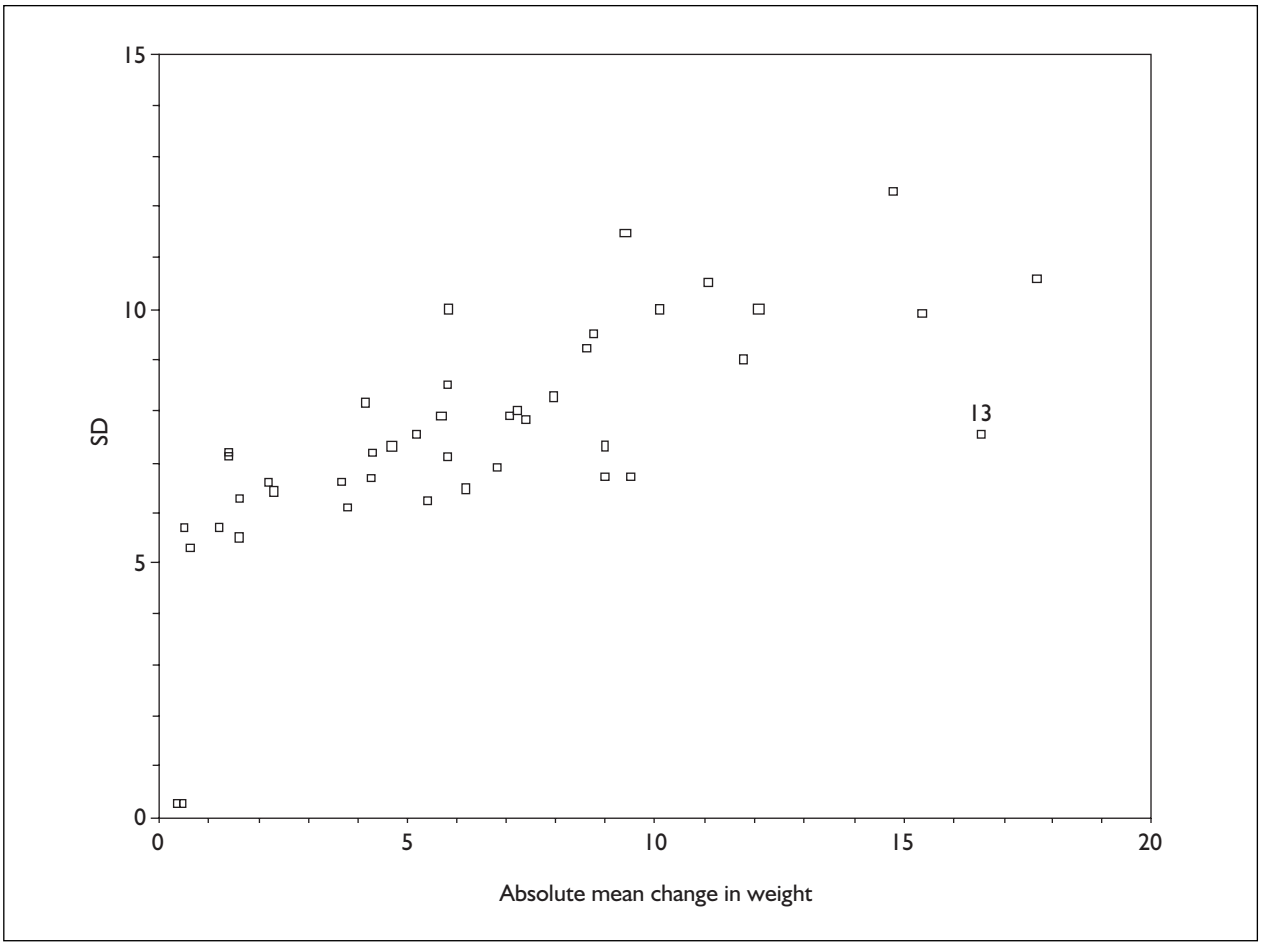

FIGURE 250 *Scatterplot of the standard deviation of the mean change in weight by the absolute mean change in weight. Observation 13 is labelled*

TABLE 24 *Summary statistics and the equations for the predicted values of the standard deviations of the two linear regressions*

n	R^2			Constant		Slope
41	53.7%	SD	=	5.915	+	0.283 * abs(mean)
40	63.4%	SD	=	5.694	+	0.328 * abs(mean)

excluded to see whether the regression coefficients changed.

Discussion

The results from the two linear regressions were similar. Diagnostic plots (not shown) suggested that the regression could be improved by allowing for the increase in variation of the standard deviation with increasing mean; however, this is unlikely to change the results.

Conclusion

When the mean change in weight since baseline (mean) is known but its standard deviation is unknown, then the equation:

$$\text{SD} = 5.915 + 0.283 * \text{absolute(mean)}$$

can be used to derive the standard deviation of the mean change (*Table 24*).

Appendix 14

Statistical methods for estimation of standard deviation of change in risk factors

Estimation of standard deviation of change in blood pressure

Introduction

The following short report describes the derivation of an equation for the standard deviation for the change in BP from baseline given the mean change in BP since baseline. Both SBP and DBP were available.

Method

Summary statistics were provided from a series of trials representing 96 trial–treatment–BP combinations. A linear regression was made of the standard deviation of the mean change on the absolute mean change for both systolic and diastolic data.

Results

Of the 96 trial–treatment–BP combinations (46 SBP and 50 DBP), 51 (25, 26) reported both the mean change and the standard error of the mean change in BP from baseline to the end of the first treatment phase, while 12 (6, 6) only reported the mean and 33 (15, 18) reported neither.

The plot of standard deviation by the absolute value of the mean change showed the systolic and diastolic data to be sufficiently different not to warrant a joint regression model. The systolic data showed greater variation amongst their standard deviations. One study reported three diastolic absolute means and the standard deviation of the mean that were close to zero and they were excluded, linear regression giving $n = 25$ for SBP and $n = 23$ for DBP (*Table 25*).

SBP

The absolute mean had no effect on the standard deviation. The overall mean for the standard deviation is reported below.

DBP

The absolute mean had no effect on the standard deviation. When two influential points were excluded there was no change in the result. The overall mean for the standard deviation is reported below.

Discussion

Only just over half of the trial–treatment–BP combinations were available for use in the regression models. Of the remaining 45, 33 had data on both the mean and standard deviation of the mean at the two time-points available. Standard deviations for the change could be derived if some assumptions on correlation were made, possibly based on the nine observations where all three standard deviations were available.

Conclusion

- Standard deviation of the mean change in SBP, use 12.7 mmHg.
- Standard deviation of the mean change in DBP, use 8.3 mmHg.

Estimation of standard deviation of change in fasting lipids and plasma glucose level control

Introduction

The following short report describes the derivation of an equation for the standard deviation for the change in total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, fasting plasma glucose and HbA_{1c} from baseline given the mean change since baseline.

Method

Summary statistics were provided from a series of trials representing 208 trial–treatment–blood measure combinations from 50 trial–treatment combinations. The relationship between the absolute mean change and the standard deviation of the mean change was examined for 6 types of blood measure: total cholesterol from 44 trial–treatment combinations, LDL from 30, HDL from 42, TGs from 42, fasting glucose from 30 and HbA_{1c} from 20. The relationship could be affected by whether participants were diabetic or non-diabetic, in particular for fasting glucose and HbA_{1c}.

The following analysis was done for each blood measure:

TABLE 25 *Summary statistics for the mean standard deviation of the mean change in blood pressure*

	n	Min.	Max.	Mean	SD
Systolic	25	6.80	23.97	12.7070	4.0164
Diastolic I	23	5.60	14.75	8.2958	2.1794
Diastolic II	21	5.60	9.40	7.7549	1.2773

Diastolic II was based on removing two influential data points.

TABLE 26 *Summary statistics for the standard deviations of the risk factors*

Blood measure	Mean SD	Median SD	Details
HDL	0.29	0.24	Mostly below 0.4, except for five between 0.4 and 0.6 when $n < 100$
LDL	0.74	0.71	No relationship with *n*
TGs	0.96	0.81	Mostly below 1.5, except for four between 1.5 and 3.5 when $n < 50$
Cholesterol	1.08	0.83	A narrow band of SDs. One outlier. Four higher SDs, three from small trials ($n = 30$) and one trial ($n \simeq 100$)
Fasting glucose	2.43	1.42	Clear threshold effect. One outlier (a possible typographic error). Two high values for two large studies ($n \simeq 350$). Most SDs < 2
	3.11	3.49	When $n < 30$
	1.98	0.95	When $n \geq 30$
HbA_{1c}	1.96	1.60	Clear threshold effect. SDs increase rapidly when $n < 30$
	2.70	2.10	Where $n < 30$
	0.76	0.66	Where $n \geq 30$

- plot of the number of observations versus the standard deviation
- summary statistics for the standard deviation by treatment
- where the SD varied with study size, summary statistics stratified by study size.

Results

The plots suggested that the standard deviations were quite stable, but below a threshold there were cases where some of the standard deviations were greater as the number of participants fell (*Table 26*). The threshold varied for each measure. Causes for this were not reviewed.

Discussion

The effect of study size needs to be reviewed when estimating standard deviations. For the blood lipids this appears to make little difference and either the mean or median standard deviation could be used. Erring on the side of caution would suggest using the mean value. There is, however, a study size effect for glucose and HbA_{1c}. The possibility of using the stratified SDs should be considered.

The cause of the effect of the number of observations was not reviewed. The main candidate would be treatment. Plots were reviewed but there are numerous treatments and there is no clear way in which to group them.

Appendix 15

Protocol for a systematic review of observational epidemiological evidence

Objective

The objective of this review is to look at prospective studies systematically to identify the effects of reduced BMI on long-term health outcomes with statistical modelling methodology.

Criteria for considering studies for this review

Inclusion criteria

Types of studies

- Information from all prospective or cohort studies carried out on patients with a BMI ≥ 28 kg/m^2
- minimum duration of the study for surgical follow-up at least 5 years; for studies with non-surgical follow-up, duration of study at least 2 years
- BMI measured on at least two occasions during the study period
- in MEDLINE, terms for cross-sectional studies and prevalence studies will be included in the search strategy to provide studies for economic modelling. Relevant abstracts will be sent to the economist for inclusion. In other databases the search terms for the economic modelling will be omitted
- studies published in all languages from 1966 up to April 2001
- major journals that are indexed will be reviewed up to June 2001.

Types of participants

- Studies on adults from the age of 18 years up to 70 years
- studies on populations who weight-cycle
- studies on Caucasian populations. However, studies on immigrant populations such as African–Americans, Japanese Americans and British Asians will be included.

Exclusion criteria

- Studies on people with a BMI < 28 kg/m^2
- non-human studies
- people with bulimia nervosa
- studies on children less than 18 years old, and people more than 70 years old
- population-based studies which include a small subgroup of obese patients
- Oriental, African and Asian population studies
- studies with loss to follow-up of more than 20% of the study population.

Types of outcome measures

Data will be extracted on the following outcome measures:

- mortality from all causes
- morbidity from CVD (including risk factors: blood lipids, BP)
- CHD
- cerebrovascular disease: stroke
- diabetes mellitus (including risk factor: blood glucose)
- cholelithiasis
- musculoskeletal: arthritis
- cancer: breast, colorectal, prostate, endometrial
- asthma
- sleep apnoea
- NASH
- urinary incontinence
- bone fractures
- psychological health and quality of life
- co-morbidities
- risk scoring systems.

Search strategy for identification of studies

Databases for the search

A database search for the prospective studies will be conducted using:

- MEDLINE
- EMBASE
- CINAHL
- HealthSTAR.

- Specific MeSH terms will be used and modified according to the relevant databases, in addition
  - reference lists of identified articles and review articles will be searched for further relevant prospective studies
  - authors will be contacted for details of the study if additional information is necessary.

Method of review

Identification of the studies

All possible studies will be entered into Reference Manager version 9. Subject keywords and source of articles will be added. Abstracts and study titles will be read by two researchers initially to check for consistency, and later on by one researcher. Articles on cross-sectional and prevalence studies on people with obesity and any other relevant articles will be sent to the economist for evaluation and inclusion.

Quality assessment of the studies

Full copies of the eligible studies will be obtained and assessed by two researchers initially to check for consistency, and later on by one researcher. Any doubts about the inclusion of a study will be resolved by discussion.

Data extraction

The following data will be extracted using a standard form:

- year of study
- author and country
- sample size
- age and gender of the participants
- ethnic groups of participants
- specifically targeted groups (diabetes, hypertension)
- co-morbidities
- risk factors: smoking, lipids, blood pressure, blood glucose, family history
- details of follow-up: duration, percentage of follow-up
- results: outcomes.

Statistical modelling will be done based on the evidence of effect of weight loss on long-term health outcomes from the epidemiological studies and the RCTs.

Appendix 16

Search strategies

The electronic bibliographic database MEDLINE (National Library of Medicine, the electronic version of *Index Medicus*, USA) was searched from 1966 to May 2001 using the developed search strategy for the prospective and cohort studies:

1. cohort studies/
2. prospective studies/
3. follow-up studies/
4. longitudinal studies/
5. cohort$.tw.
6. (prospective adj1 stud$).tw.
7. (follow-up adj1 stud$).tw.
8. (longitudinal adj1 stud).tw.
9. epidemiological studies/
10. (epidemiological adj1 stud$).tw.
11. (case-control adj1 stud$).tw.
12. (retrospective adj1 stud$).tw.
13. (cross-sectional adj1 stud).tw.
14. (survey or surveys).tw.
15. prevalence.tw.
16. (prevalence adj1 stud$).tw.
17. (relative adj1 (risk or risks)).tw.
18. or/1-17
19. obesity/
20. obesity in diabetes/
21. obesity, morbid/
22. overweight.tw.
23. (weight adj1 reduc$).tw.
24. (weight adj1 control$).tw.
25. (weight adj1 cycl$).tw.
26. (weight adj1 chang$).tw.
27. (waist adj3 hip adj3 (ratio or ratios) adj5 chang$).tw.
28. (body adj3 mass adj3 index adj5 chang$).tw.
29. quetelet$.tw.
30. (quetelet$ adj1 index).tw.
31. (waist adj1 circumference adj5 chang$).tw.
32. (body adj1 weight adj5 chang$).tw.
33. or/19-32
34. 18 and 33
35. limit 34 to human
36. limit 35 to (newborn infant <birth to 1 month> or infant <1 to 23 months> or preschool child <2 to 5 years> or child <6 to 12 years> or adolescence <13 to 18 years>)
37. 35 not 36

EMBASE, the Experta Medica database produced by Elsevier Science, was searched from 1980 to week 17 of 2001. The search terms were modified according to the relevant MeSH terms:

1. prospective studies/
2. (prospective adj1 stud$).tw.
3. cohort$.tw.
4. (cohort adj1 stud$).tw.
5. (follow-up adj1 stud$).tw.
6. longitudinal study/
7. (longitudinal adj1 stud).tw.
8. (epidemiological adj1 stud$).tw.
9. or/1-8
10. obesity/
11. morbid obesity/
12. diabetic obesity/
13. overweight.tw.
14. weight reduction/
15. (weight adj1 reduc$).tw.
16. (weight adj1 control$).tw.
17. (weight adj1 cycl$).tw.
18. (weight adj1 chang$).tw.
19. (waist adj3 hip adj3 (ratio or ratios) adj5 chang$).tw.
20. (body adj3 mass adj3 index adj5 chang$).tw.
21. (quetelet$ adj1 index).tw.
22. quetelet$.tw
23. (waist adj1 circumference adj5 chang$).tw.
24. (body adj1 weight adj5 chang$).tw.
25. or/10-24
26. 9 and 25
27. Nonhuman/
28. 26 not 27
29. limit 28 to (adolescent <13 to 17 years> or child <unspecified age> or embryo <first trimester> or infant <to one year> or preschool child <1 to 6 years> or school child <7 to 12 years>)
30. 28 not 29

HealthSTAR, produced by the National Library of Medicine, was searched from 1975 to December 2000:

1. cohort studies/
2. longitudinal studies/
3. prospective studies/
4. follow-up studies/

5. cohort$.tw.
6. (prospective adj1 stud$).tw.
7. (follow-up adj1 stud$).tw.
8. (longitudinal adj1 stud).tw.
9. epidemiological studies/
10. (epidemiological adj1 stud$).tw.
11. or/1-10
12. obesity/
13. obesity in diabetes/
14. obesity, morbid/
15. overweight.tw.
16. (weight adj1 reduc$).tw.
17. (weight adj1 control$).tw.
18. (weight adj1 cycl$).tw.
19. (weight adj1 chang$).tw.
20. (waist adj3 hip adj3 (ratio or ratios) adj5 chang$).tw.
21. (body adj3 mass adj3 index adj5 chang$).tw.
22. quetelet$.tw.
23. (quetelet$ adj1 index).tw.
24. (waist adj1 circumference adj5 chang$).tw.
25. (body adj1 weight adj5 chang$).tw.
26. or/12-25
27. 11 and 26
28. (animal not human).sh.
29. 27 not 28
30. limit 29 to (newborn infant <birth to 1 month> or infant <1 to 23 months> or preschool child <2 to 5 years> or child <6 to 12 years> or adolescence <13 to 18 years> or "aged, 80 and over")
31. 29 not 30
32. limit 31 to nonmedline

CINAHL was searched from 1982 to April 2001:

1. prospective studies/
2. (prospective adj1 stud$).tw.
3. cohort$.tw.
4. (cohort adj1 stud$).tw.
5. (follow-up adj1 stud$).tw.
6. (longitudinal adj1 stud).tw.
7. epidemiological research/
8. (epidemiological adj1 stud$).tw.
9. concurrent prospective studies/
10. panel studies/
11. or/1-10
12. obesity/
13. obesity, morbid/
14. overweight.tw.
15. (weight adj1 reduc$).tw.
16. weight control/
17. (weight adj1 control$).tw.
18. (weight adj1 cycl$).tw.
19. (weight adj1 chang$).tw.
20. (waist adj3 hip adj3 (ratio or ratios) adj5 chang$).tw.
21. waist-hip ratio/
22. body mass index/
23. (body adj3 mass adj3 index adj5 chang$).tw.
24. quetelet$.tw.
25. (quetelet$ adj1 index).tw.
26. (waist adj1 circumference adj5 chang$).tw.
27. (body adj1 weight adj5 chang$).tw.
28. or/12-27
29. 11 and 28
30. animal studies/
31. 29 not 30
32. limit 31 to (pregnancy of fetus <conception to birth> or newborn infant <birth to 1 month> or infant <1 to 23 months> or preschool child <2 to 5 years> or child <6 to 12 years> or adolescence <13 to 18 years> or "aged, 80 and over")
33. 31 not 32

Appendix 17

Data extraction and quality assessment form

Data Extraction Form – PROSPECTIVE STUDIES

Search database: _____

Database ID number: _____ Checked by: _____

ELIGIBILITY CHECK

	YES	NO	Unclear or other with details
Prospective study			
Obese group (at least one subgroup) BMI ≥ 28 kg/m^2			
Weight loss recorded			
Follow-up more than 2 years for non-surgical interventions			
Follow-up more than 5 years for surgical interventions			
At least one of the specified outcomes			

DATA EXTRACTION

Final database: **Final obesity HTA** Unique ID number: _____

BIBLIOGRAPHIC DETAILS

Authors _____

Journal _____

Title _____

_____

Year Volume Issue Page numbers

Country of origin _____

Reviewer 1 _____ Reviewer 2 _____

SEARCH DETAILS

MEDLINE EMBASE HealthSTAR CINAHL Other (e.g. PhD)

Identified from reference checking (which article?)

Search strategy (key MeSH terms)

SAMPLE DETAILS

Sample size	Total: Males: Females:
Sex of the sample	
Age of the sample	Mean: SD: Range: Others:
Country of the sample	
Ethnic groups	Caucasians African–Americans Japanese Americans British Asians
Socio-economic class	Class I Class II Class III Class IV Class V
Body mass index at the start of the study (BMI)	Mean: Range: WHO Class (no:) ≥ 28–29.9 30–34.9 35–39.9 ≥ 40
Waist circumference at the start of study	Mean: Range: Others:
Any others measurement at start of study	

RISK FACTORS RECORDED

Smoking	Yes	No
Family history of obesity	Yes	No
Blood pressure	Yes	No
Cholesterol	Yes	No
Blood sugars	Yes	No
Diabetes mellitus	Yes	No

INTERVENTION/PROCEDURE

Intervention	Type	Details
Was weight loss	Intentional/Non-intentional:	
Intervention before follow-up	Surgical/Non-surgical/ Combination of interventions:	

ASSESSMENT AND FOLLOW-UP

Setting of study	Hospital Community Urban/Rural General practice Obesity clinic Others	Details:
Duration of follow-up		
Number of follow-ups		Details:
Percentage of follow-up		
Are losses to follow-up described?	Yes/No	Details:
Medium employed for assessment	Specified/Non-specified	
Mode of assessment	Questionnaires Interviews Physical examination Lab investigations Others	Details of assessment:
Quantification of weight loss	% or average weight loss Change in BMI (WHO class) Change in waist circumference: Other measurement:	Details:

OTHER DETAILS

Weight cycling	Yes/No Number of cycles Average weight loss in each cycle	Details:
Risk scoring systems	Yes/No	Details:

OUTCOMES MEASURED

Number of outcomes measured ☐ **What are they?**	**Details of outcomes measured**
Mortality	
Lipids	
Blood pressure	
Coronary heart disease	
Stroke	
Blood sugars	
Gallstones	
Arthritis	
Breast cancer	
Colorectal cancer	
Prostate cancer	
Endometrial cancer	
Asthma	
Sleep apnoea	
NASH (non-alcoholic steatohepatitis)	
Urinary incontinence	
Psychological health/quality of health	
Fracture of bones	

QUALITY ASSESSMENT FORM

* Ring the appropriate code

	YES	UNCLEAR/ POSSIBLY	NO
1. Was the aim of the study clearly stated?	2	1	0
Sample:			
2. Was sample size justified?	2	1	0
3. Age of patients defined?	2	1	0
4. Measurements at start of study clearly stated?	2	1	0
5. Are measurements likely to be valid and reliable?	2	1	0
6. Risk factors recorded clearly?	2	1	0
Conduct of the study:			
7. Was intervention before follow-up defined?	2	1	0
8. Setting of the study clear?	2	1	0
9. Is mode of assessment described?	2	1	0
10. Did untoward events occur during the study?	1	0	2
Follow-up:			
11. How adequate was the follow-up?	2	1	0
12. Was follow-up long enough?	2	1	0
13. Are losses to follow-up described?	2	1	0
Analysis:			
14. Were basic data adequately described?	2	1	0
15. Do numbers add up?	2	1	0
16. Did analysis allow for passage of time?	2	1	0
17. Was statistical significance assessed?	2	1	0
Interpretation:			
18. Were the main findings interpreted adequately?	2	1	0
19. Were the null/negative findings interpreted?	2	1	0
20. Are important effects overlooked?	0	1	2

TOTAL: (add ringed scores above): _____ (A)

Maximum possible score (2 × 20) _____ (B)

OVERALL RATING (A/B expressed as %) _____ (%)
Not satisfactory (1–50%)
Moderate (51–80%)
Very satisfactory (81–100%)

Queries/Comments

Appendix 18

Excluded studies

1. Research Group of the Rome Project of Coronary Heart Disease Prevention. Eight-year follow-up results from the Rome Project of Coronary Heart Disease Prevention [published erratum appears in *Prev Med* 1986;**15**:436]. *Prev Med* 1986;**15**:176–91.
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Appendix 19

Characteristics of prospective studies included in the review, and recent papers and studies to update the epidemiology review for long-term health outcomes

Appendix 19a

Characteristics of prospective studies included in the review

First author, year	Country	Sample size	Outcomes measured	Outcome indices	Intervention	Average follow-up (years)	Percentage follow-up
Prospective studies (*n* = 28)							
Peppard, 2000[290]	USA	258 (M 140, F 128)	Sleep apnoea (AHI)	OR	None	4	72.8%
Charuzi, 1992[264]	Israel	51 (M 44, F 7)	AI	Absolute value	Surgical (bariatric surgery)	6.3	86%
Sugerman, 1992[291]	USA	126 (M 78, F 48)	AI, lung volume	AI: value; PaO_2 and PCO_2: mmHg	Surgical (VBG)	4.5	45%
Pories, 1992[266]	USA	515 (M 77, F 438)	DM, hypertension	Incidence	Surgical (gastric bypass)	11	50% at 5 years
Williamson, 1995[274]	USA	43,457 (all F)	Mortality: all cause, CVD, cancer, DM	Mortality rate ratios	None	12.9	?91%
Williamson, 1999[273]	USA	49,337 (all M)	Mortality: all cause, CVD, cancer, DM	Mortality rate ratios	None	12.9	?91%
Williamson, 2000[275]	USA	4970 (M 2509, F 2461)	Mortality: all cause, CVD, cancer, DM	Mortality rate ratios	None	12.9	91.4%
Rumpel, 1993[276]	USA	326 (all F)	Mortality: all cause, CVD, cancer, other	Relative risks (weight groups)	None	Median 13.6	?
Chaturvedi, 1995[267]	Europe	541 (M 210, F 331)	Mortality in NIDDM	Relative risks	None	8–19	?
O'Leary, 1980[272]	USA	274	DM, lipids, hypertension	% improved	Surgical (jejunal bypass)	?7 (not clear)	?84%
Ford, 1997[268]	USA	8545 (M 3220, F 5325)	DM	Hazard ratio (weight groups)	None	?10	?
Moore, 2000[269]	USA	618 (M 333, F 285)	DM	Relative risks	None	16	?
Watts, 1990[281]	USA	135	DM	Glucose: mmol/l	Non-surgical (diet)	4	?
Wannamethee, 1999[280]	UK	7735 (all M)	DM	Relative risks, incidence rate	None	Mean 16.8	91%
Wittgrove, 2000[289]	USA	500	Co-morbidities	Proportion of reduction	Surgical (gastric bypass)	3–60 months	<1% at 5 years

continued

First author, year	Country	Sample size	Outcomes measured	Outcome indices	Intervention	Average follow-up (years)	Percentage follow-up
Hess, 1998[271]	USA	440 (M 95, F 345)	Lipids, glucose	Lipids and glucose: mg/dl	Surgical (biliopancreatic diversion)	8	21% at 5 years
Wing, 1995[282] (W)	USA	202 (M 101, F 101)	Lipids, BP	Lipids: mmol/l or mg/dl; BP: mmHg	Non-surgical (VLCD, exercise and behaviour)	2.5	76%
Kauffman, 1992[283]	Spain	836 (M 714, F 125)	Lipids, BP	Correlation	Non-surgical (diet and exercise)	2	77%
Gleysteen, 1992[286]	USA	43	Lipids	mmol/l	Surgical (Roux-en-Y bypass)	5–7	77%
Rossner, 1980[287]	Sweden	29 (M 10, F 19)	Lipids	mmol/l	Surgical (jejunoileal bypass)	3.6	80% (M), 53% (F)
Ewbank, 1995[284]	UK	55	Lipids	mmol/l	Non-surgical (VLCD and behaviour)	2	82%
Foster, 1996[163] (W)	USA	48 (all F)	Psychological well-being	No. of events	Combined (surgical and non-surgical)	4.8	45%
van Gemert, 1998[270]	Netherlands	62 (M 18, F 44)	Psychological well-being	NVM, NPV and SIG scores	Surgical (VBG, gastric banding or bypass)	7.2	91%
Holt, 1987[265]	USA	50 (M 12, F 38)	Co-morbidities (lipids, DM, stress incontinence, sleep apnoea, hypertension, arthritis)	% improvement of all co-morbidities together	Surgical (VBG)	2–5	80%
Kunesova, 1998[262]	Prague	318 (M 64, F 254)	Hypertension	mmHg	Combined (surgical and non-surgical)	3.5	32.4%
Carson, 1994[263]	USA	45 (M 10; F 35)	Hypertension	% improved	Surgical (gastric bypass)	4	40% at 4 years
Foley, 1992[288]	USA	74 (M 24, F 50)	Hypertension	% improved	Surgical (Roux-en-Y, VBG)	4.2	91%
Sjostrom M, 1999[285]	Sweden	36	Hypertension, lipids	Hypertension: mmHg; lipids: mmol/l	Non-surgical	5	

continued

First author, year	Country	Sample size	Outcomes measured	Outcome indices	Intervention	Average follow-up (years)	Percentage follow-up
Non-randomised (*n* = 3) and randomised (*n* = 6) trials							
Long, 1994[279] (NR)	USA	109 (M 15, F 94)	NIDDM	Incidence rates	Surgical (bariatric vs no surgery)	6.2	40% at 6 years
Karason, 1999[277] (NR)	Sweden	39	Lipids, BP, glucose	Lipids and glucose: mmol/l; BP: mmHg	Surgical (gastric surgery vs diet)	4	92%
Sjostrom CD 2000[278] (NR)	Sweden	346 (M 118, F 228)	Hypertension, DM, BP	HT: incidence and OR; DM: prevalence, incidence and OR; BP: mmHg	Surgical (surgery vs customary treatment)	8	73%
Wing, 1998[176] (R)	USA	154 (M 32, F 122)	DM, lipids, BP	DM: values; lipids: mmol/l; BP: mmHg	Non-surgical (diet, exercise and behaviour)	2	81%
Rossner, 2000[37] (R)	Sweden	718 (M 127, F 591)	BP, glucose	BP: mmHg glucose: mmol/l	Non-surgical (orlistat and diet vs placebo and diet)	2	60%
Davidson, 1999[41] (R)	USA	880 (M 139, F 741)	Lipids, glucose, insulin	Lipids and glucose: mmol/l; insulin: pmol/l	Non-surgical (orlistat and diet vs placebo and diet)	2	45.8%
Teupe, 1991[84] (R)	Germany	100 (M 40, F 60)	BP, lipids	BP: mmHg; Lipids: mg/100 ml	Non-surgical (metformin and diet vs diet)	2	46%
Tuomilehto, 2001[168] (R)	Finland	522 (M 172, F 350)	DM	Incidence, relative risks	Non-surgical (diet and exercise vs control)	2–6 (mean 3.2)	92%
Hauptman, 2000[45] (R)	USA	635 (M 138, F 497)	Lipids, BP, glucose, insulin	Lipids and glucose: mmol/l; BP: mmHg; insulin: pmol/l	Non-surgical (orlistat and diet vs placebo and diet)	2	52%

W, study included weight cycling; NR, non-randomised trial; R, randomised trial; M, male; F, female; AHI, apnoea–hypopnoea index; AI, apnoea index; PaO_2, arterial oxygen tension; PCO_2, carbon dioxide tension; VBG, vertical banded gastroplasty.

Appendix 19b

Characteristics of recent papers and studies to update the epidemiology review for long-term health outcomes

Study and country	Participants	Interventions	Main outcomes	Date	Notes
Fisher, 2002[295] Israel	40 untreated, mean ± SD Age 47 ± 10 years, BMI 28.9 ± 4.8 kg/m^2 11 weight losers, Age 46 ± 13 years, BMI 33.3 ± 4.5 kg/m^2	Treated had dietary programme for weight loss. All had reached their target weight	BMI, sleep apnoea measures	Not given	Untreated were followed for 5 ± 2.8 years (mean ± SD). Put on some weight (not sig). Effects on sleep apnoea: 0 improved, 22 unchanged, 18 worsened Those treated were followed for 2.5 ± 2.3 years. Lost some weight (sign). Effects on sleep apnoea: 3 improved, 7 unchanged, 1 worsened
Sanchez-Cabezudo, 2002[296] Origin?	75 morbidly obese participants	BPD surgery	% EWL, < 50% was classed a failure; reasons for failure of weight loss to this extent, progression of illnesses and QoL	?	All had 5-year follow-up. Even though classed as failures, the weight lost was sufficient to cure or improve their preoperative illnesses, thus improving their QoL
Flechtner-Mors, 2000[297–299] Germany	100 participants, phase I weight loss period 3 months, phase II weight maintenance 48 months	Group A prescribed menus 1200–1500 kcal, group B food substitutes	Weight, BP, lipids, blood glucose, insulin	Seems to be ongoing	Contact with those who dropped out was attempted to obtain long-term results. 75% were followed up. At 4 years: weight loss (mean ± SEM) A: 3.2 ± 0.8%, B: 8.4 ± 0.8%. Glucose and insulin sign improved in each group. Only B had improved TGs and SBP
Arribas, 2002[302] Spain	Retrospective look at a cohort of 80 morbidly obese participants, mean age 37 years, initial mean BMI 49.5 kg/m^2	VBG surgery	BMI, hypertension, lipids DM status	1986–1994: Follow-up years for further 5 years.	Beneficial changes mainly early. Still there even for those with tendency to regain weight
Paisey, 2002[301] UK	45 participants with type II DM, BMI >30 kg/m^2, diet and exercise for 6 weeks, monthly meetings for 5 months, 6 monthly follow-up	Non-randomised 15 VLCD for at least 6 weeks, 15 intensive conventional diet (ICD), 15 non-compliers	Weight loss, lipids, hypertension, glucose	1994, 5-year follow-up	ICD weight loss slower than VLCD but better maintained at 5 years where the HDL increased in ICD group and DBP reduced

continued

Study and country	Participants	Interventions	Main outcomes	Date	Notes
Gregg, 2003[305] USA	Based on USA National Health Interview Survey and supplemental survey, after exclusions, had $n = 6391$, >36 years, BMI >25 kg/m^2	Interviews demographics, health and lifestyle, weight loss intentionality	Self-reported BMI, height, weight change in previous year, linked to National Death Index. Mortality as hazard rate ratios using no weight changes as referent	Supplemental survey 1989, deaths followed up to 1997	Attempted weight loss was associated with lower all-cause mortality, independent of actual weight change. Self-reported intentional weight loss was associated with lower mortality rates. Unintentional weight loss was associated with higher mortality rates

BPD, biliopancreatic diversion; ICD, intensive conventional diet; EWL, excess weight loss.

Appendix 20

Studies and subgroups with mortality results

TABLE 27 *List of included studies*

Graph key	Author & year	Gender	Type of weight loss	Known illness	*n*	Mean age	SD	Initial BMI	SD	Last BMI	SD
5	Williamson, 1995[274]	F	Unintentional weight loss	None given	942	52.9	6.6	30.9	4.1	26.0	3.6
			Intentional weight loss of < 20 lb	None given	2745	51.7	6.3	30.4	3.1	27.3	3.1
			Intentional weight loss of > 20 lb	None given	3018	50.8	6.4	33.1	4.4	26.6	3.6
			Unintentional weight loss	Obesity related	812	55.3	6.1	31.9	4.4	26.3	4.0
			Intentional weight loss of < 20 lb	Obesity related	1550	53.8	6.3	31.5	4.0	28.5	4.0
			Intentional weight loss of > 20 lb	Obesity related	2598	53.7	6.3	34.8	5.4	27.8	4.5
6	Williamson, 1999[273]	M	Unintentional weight loss	None given	1474	52.0	6.1	29.2	2.9	26.0	2.4
			Intentional weight loss of < 20 lb	None given	2834	51.5	5.8	29	2.2	27.2	2.2
			Intentional weight loss of > 20 lb	None given	2610	51.5	5.9	31.4	3.4	26.9	2.8
			Unintentional weight loss	General illness	917	54.4	6.3	29.7	3.1	25.5	2.8
			Intentional weight loss of < 20 lb	General illness	1310	53.4	5.9	29.1	2.4	27.2	2.4
			Intentional weight loss of > 20 lb	General illness	2614	53.6	6.0	31.6	3.7	26.7	3.0
7	Williamson, 2000[275]	M and F	Unintentional weight loss	DM	649	55.6	5.7	31.8	4.1	25.9	3.6
			Intentional weight loss	DM	1669	54.6	6.0	33.5	5.0	27.7	4.0
8	Rumpel, 1993[276]	F	Unknown weight loss intention	None given	326	58.0	14.0	> 29			
9	Chaturvedi, 1995[267]	M and F	Unknown intention lost > 2 BMI	DM	541	48.0	5.6	> 29			

20 lb = 9 kg.

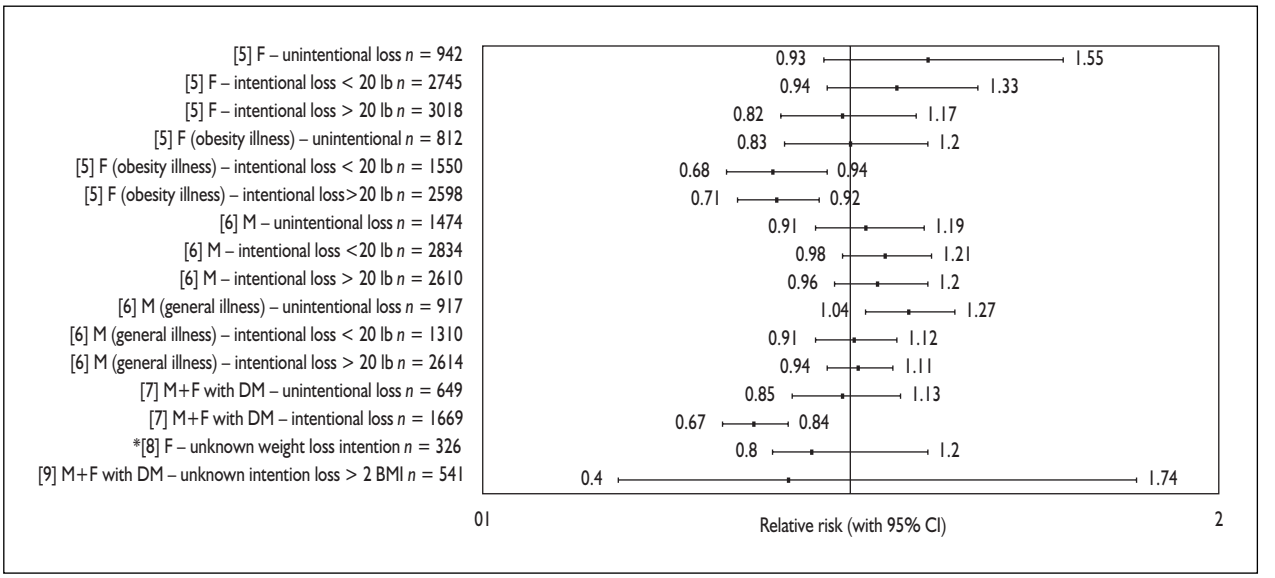


FIGURE 251 *All-cause mortality: all subgroups. Key of [study numbers] given in* Table 27. ** referent was a group that was of normal stable weight.* Q = *59.10 with 15 df: reject homogeneity at* p = *0.001*

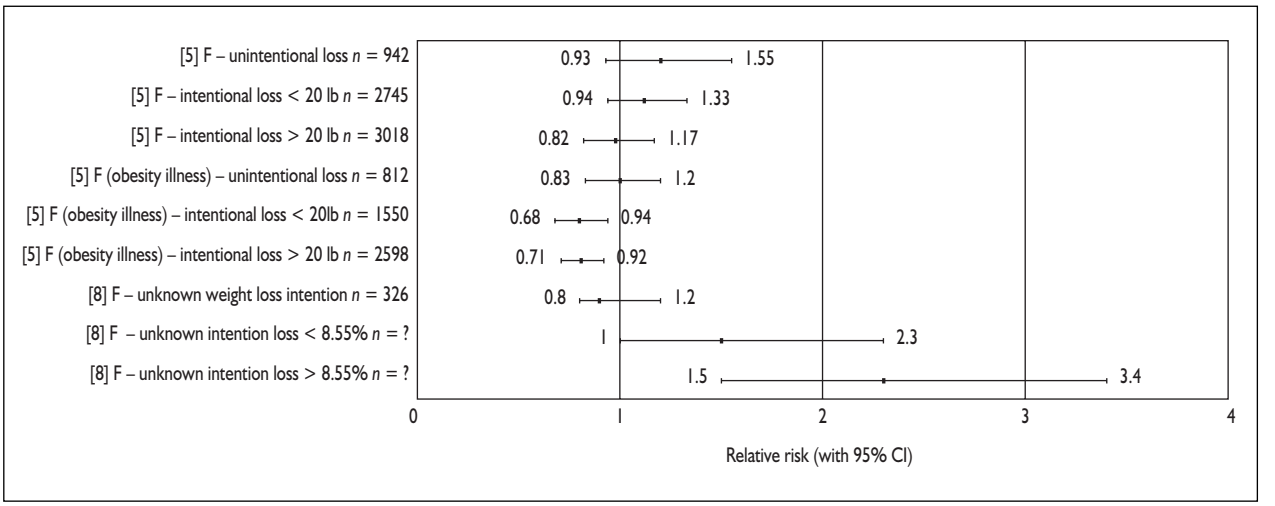


FIGURE 252(a) *All-cause mortality: women only. Key of [study numbers] given in* Table 27. Q = *40.00 with 8 df: reject homogeneity at* p = *0.001*

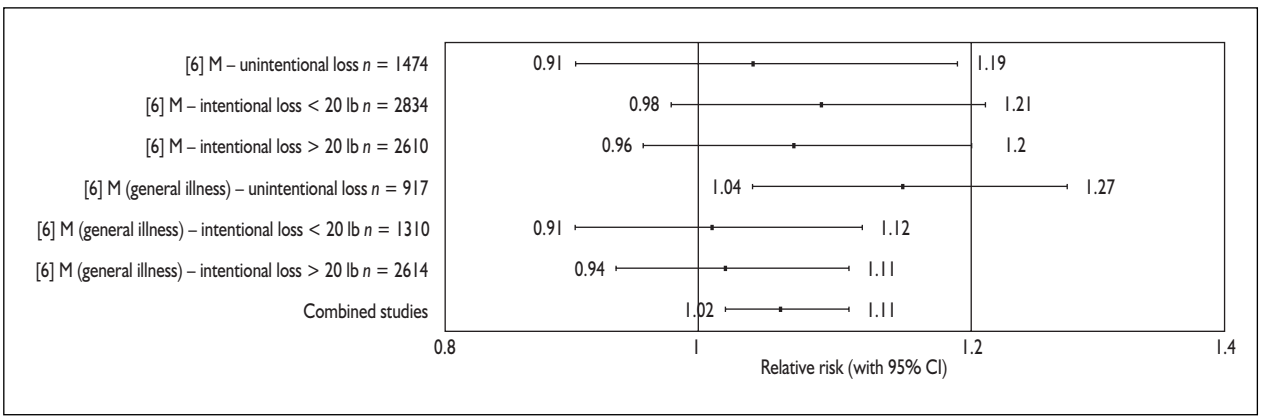


FIGURE 252(b) *All-cause mortality: men only. Key of [study numbers] given in* Table 27. Q = *4.57 with 5 df: no reason to reject homogeneity, therefore may combine study results*

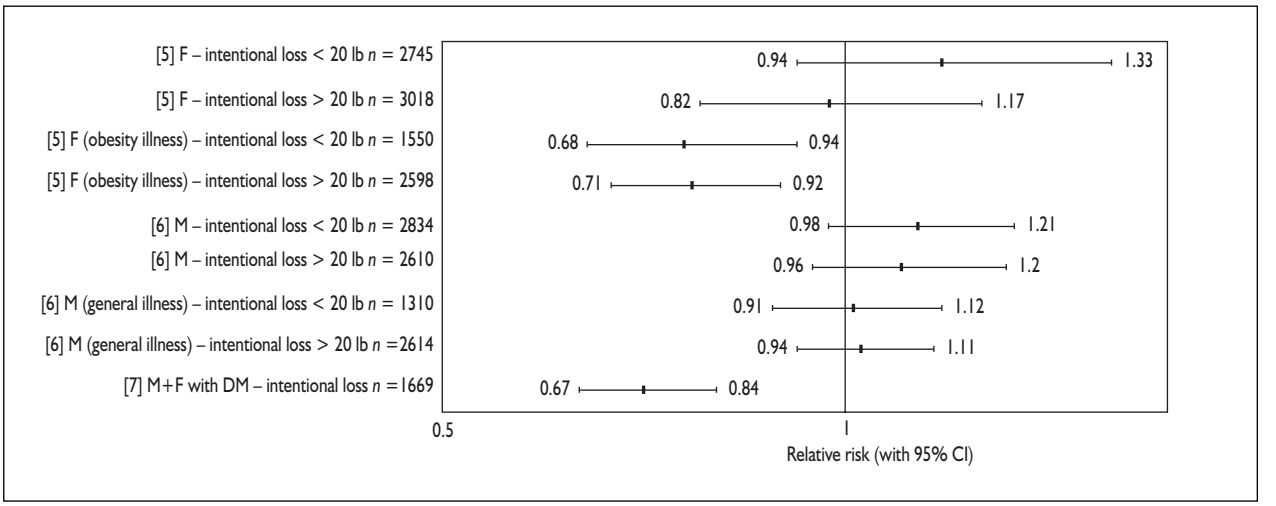


FIGURE 253(a) *All-cause mortality: intentional weight loss. Key of [study numbers] given in* Table 27. *Q = 44.99 with 8 df: reject homogeneity at* p *= 0.001*

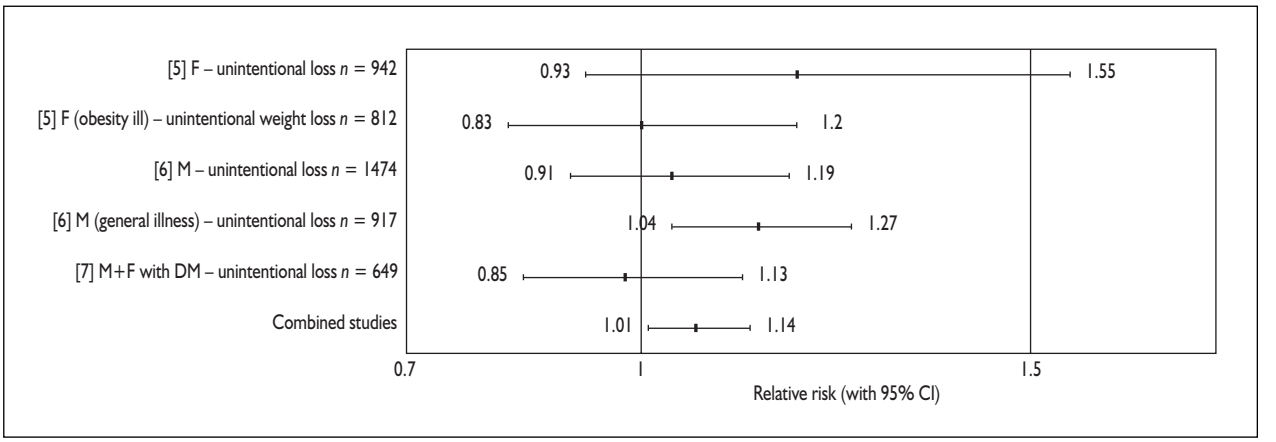


FIGURE 253(b) *All-cause mortality: unintentional weight loss. Key of [study numbers] given in* Table 27. *Q = 4.91 with 4 df: No reason to reject homogeneity, therefore may combine study results*

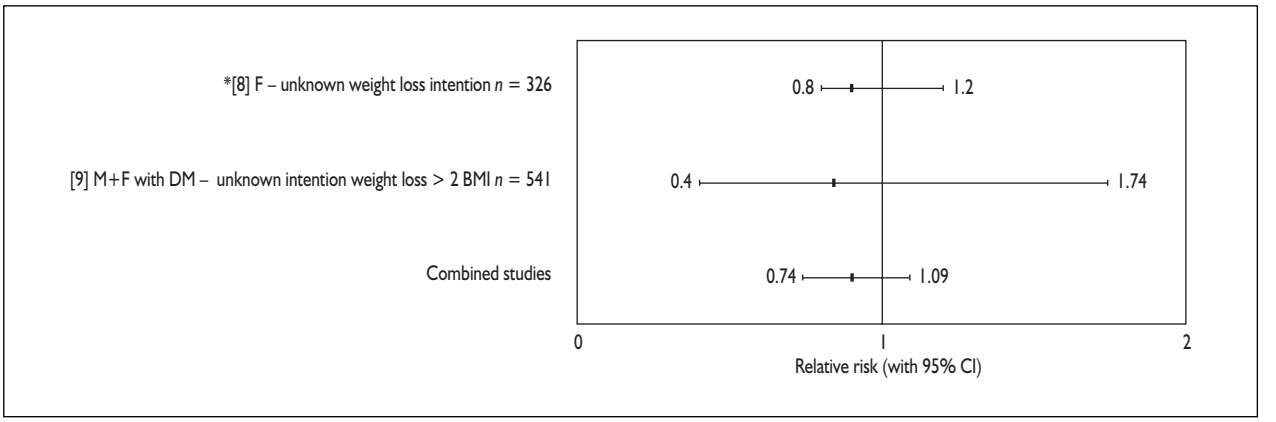


FIGURE 253(c) *All-cause mortality: unknown weight loss intention. Key of [study numbers] given in* Table 27. ** Referent is a group of normal stable weight. Q = 0.03 with 1 df: No reason to reject homogeneity, therefore may combine study results*

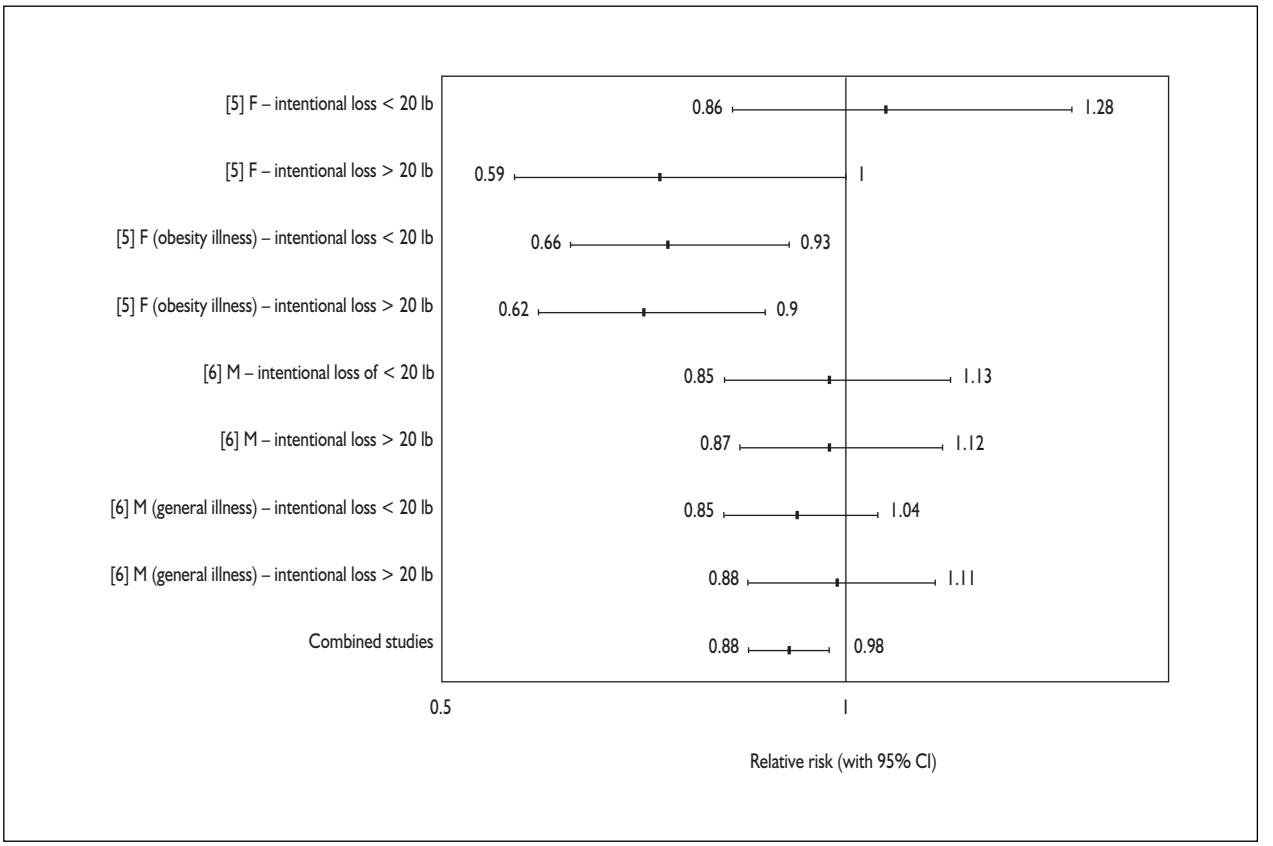


FIGURE 254(a) *All-cause mortality: weight loss within 1 year. Key of [study numbers] given in* Table 27. *Q = 14.88 with 7 df: reject homogeneity at* p *= 0.05 (nearly not significant)*

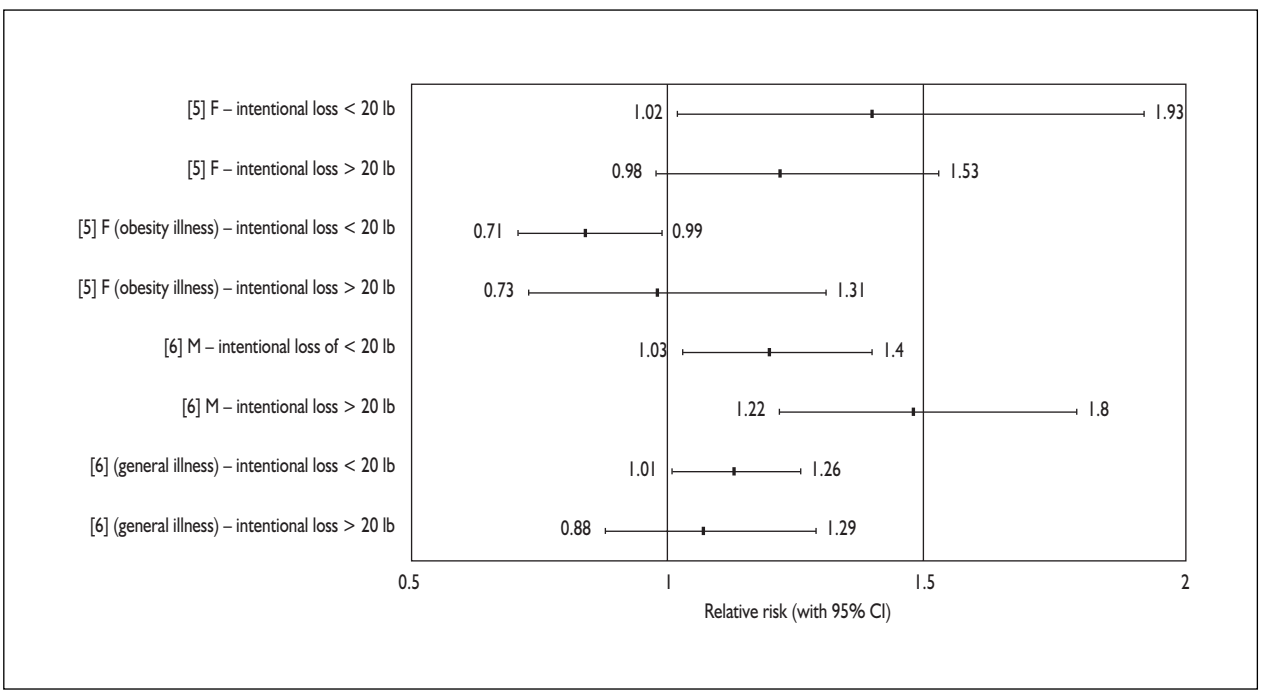


FIGURE 254(b) *All-cause mortality: weight loss taking more than 1 year. Key of [study numbers] given in* Table 27. *Q = 23.62 with 7 df: reject homogeneity at* p *= 0.01*

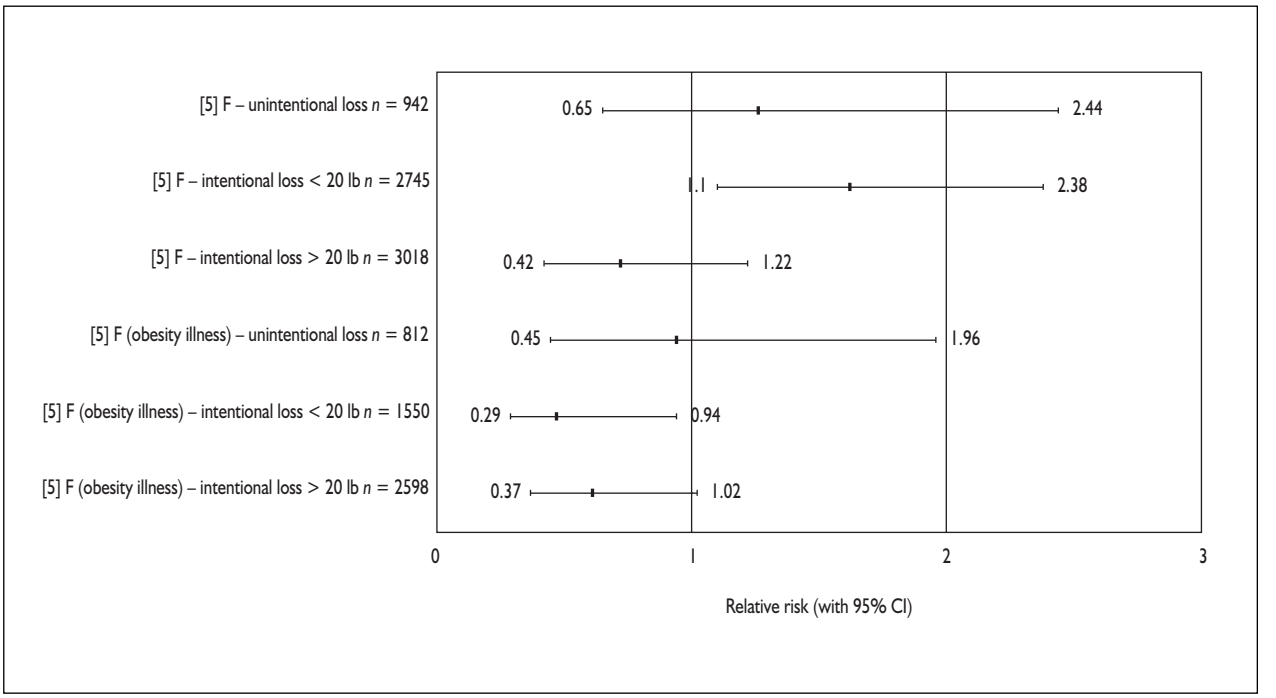


FIGURE 255 *Mortality from obesity-related illness: all subgroups. Key of [study numbers] given in* Table 27. Q = *17.47 with 5 df: reject homogeneity at* p = *0.01*

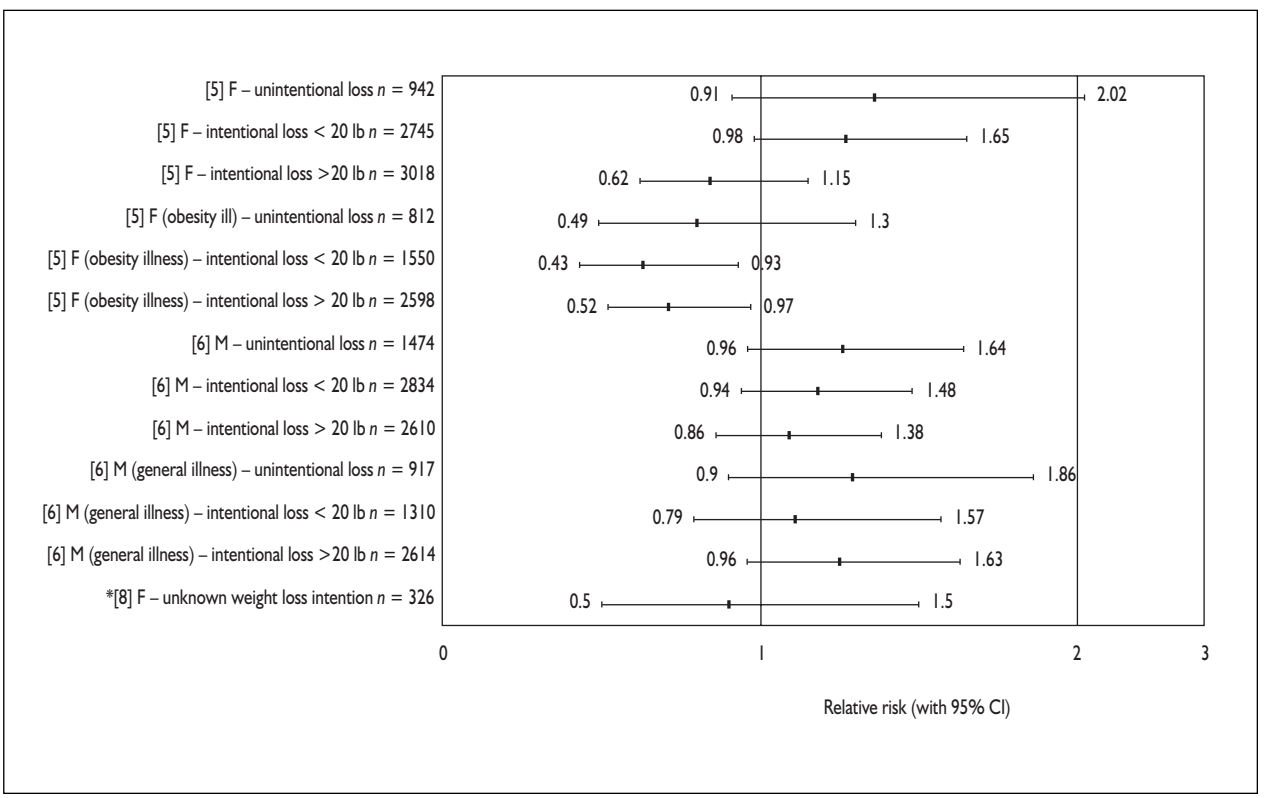


FIGURE 256 *Mortality from cancer: all subgroups. Key of [study numbers] given in* Table 27. **Referent is a group of normal stable weight.* Q = *25.61 with 12 df: Reject homogeneity at* p = *0.02*

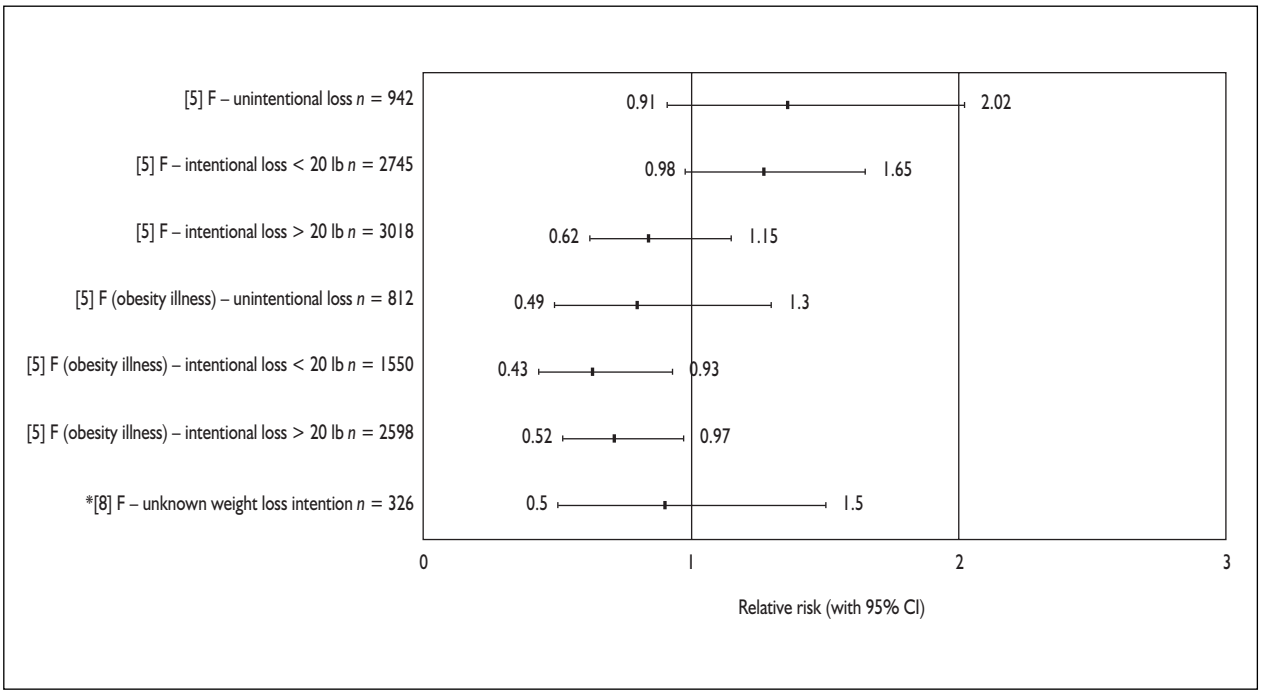


FIGURE 257(a) *Mortality from cancer: women only. Key of [study numbers] given in* Table 27. *Q = 16.58 with 6 df: reject homogeneity at* p = *0.02.*

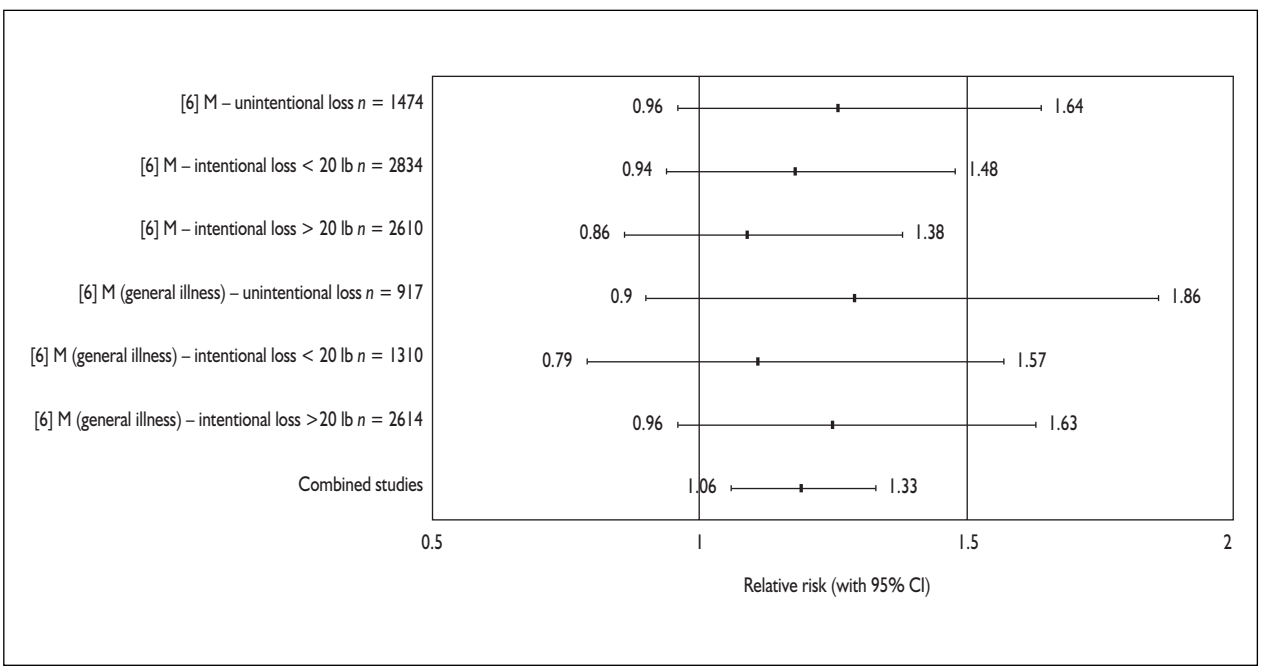


FIGURE 257(b) *Mortality from cancer: men only. Key of [study numbers] given in* Table 27. *Q = 1.19 with 5 df: no reason to reject homogeneity, therefore may combine study results*

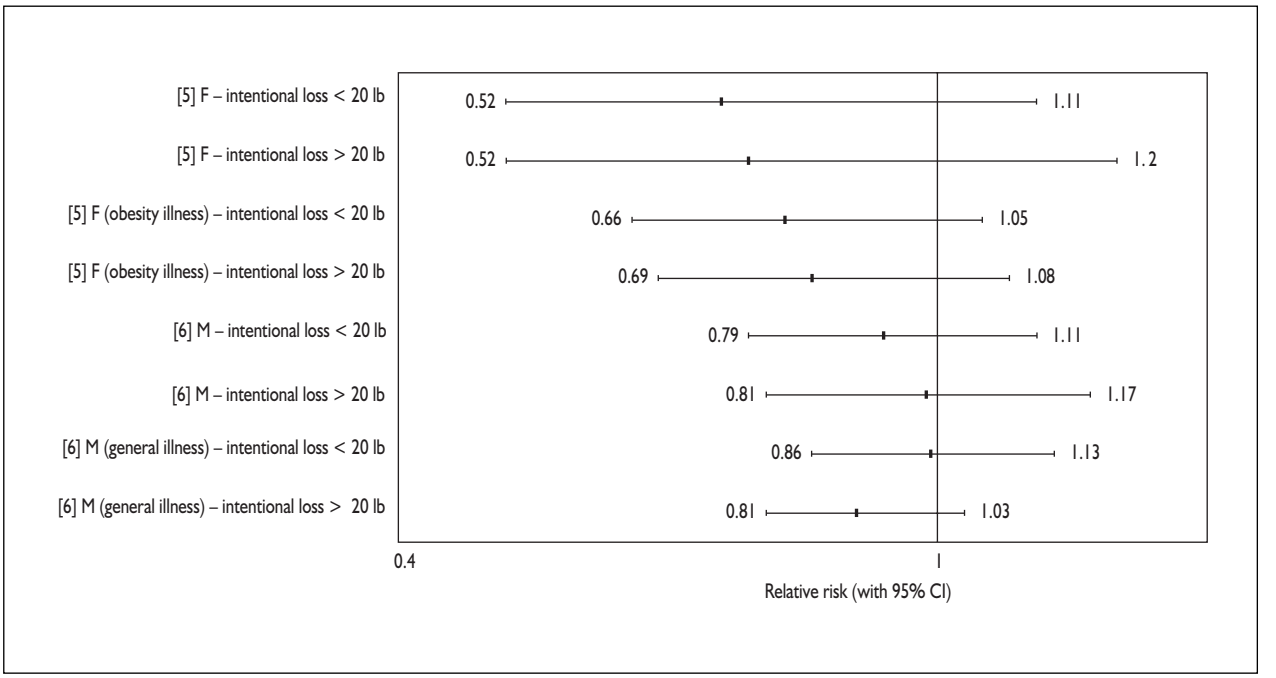


FIGURE 258(a) *Mortality from cancer: weight loss within 1 year. Key of [study numbers] given in* Table 27. Q = *18.14 with 7 df: reject homogeneity at* p = *0.02*

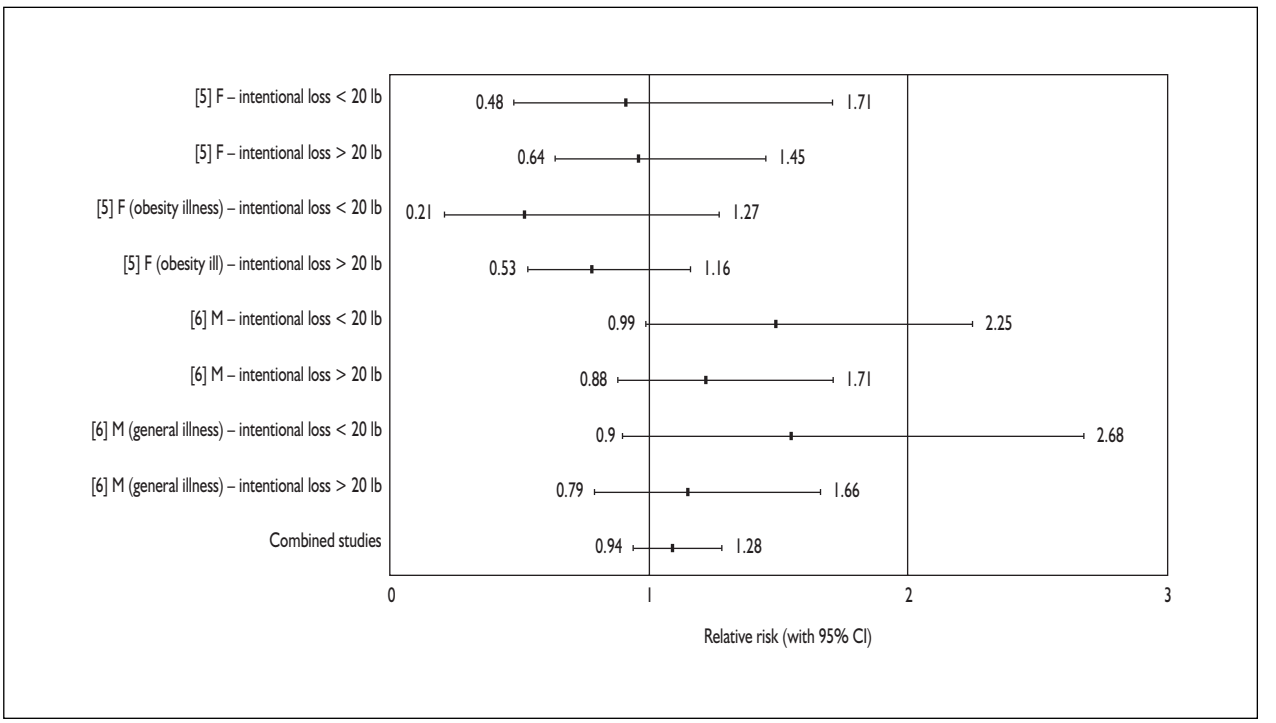


FIGURE 258(b) *Mortality from cancer: weight loss taking more than 1 year. Key of [study numbers] given in* Table 27. Q = *10.43 with 7 df: no reason to reject homogeneity, therefore may combine study results*

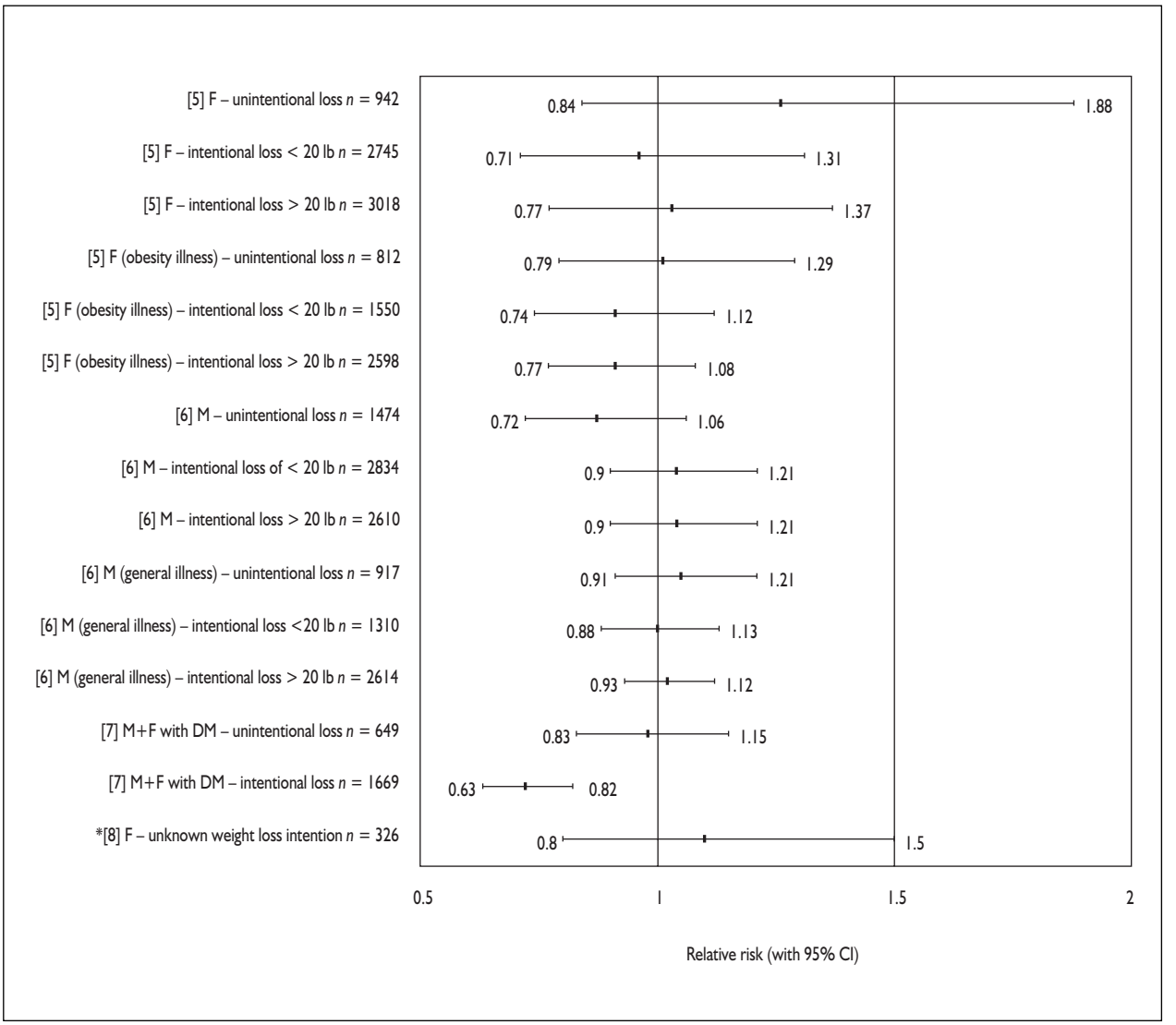


FIGURE 259 *Mortality from CVD: all subgroups. Key of [study numbers] given in* Table 27. ** Referent is a group of normal stable weight.* Q = *28.53 with 14 df: reject homogeneity at* p = *0.02*

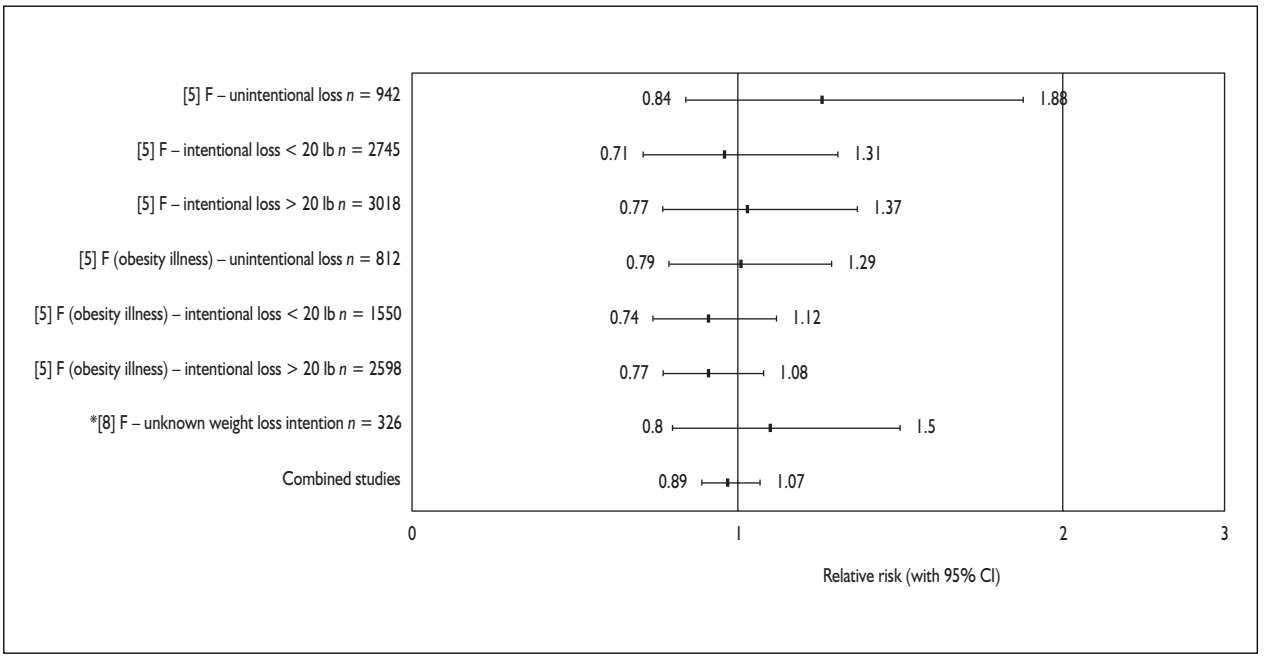


FIGURE 260(a) *Mortality from CVD: women only. Key of [study numbers] given in* Table 27. ** Referent is a group of normal stable weight. Q = 3.416 with 6 df: no reason to reject homogeneity, therefore may combine study results*

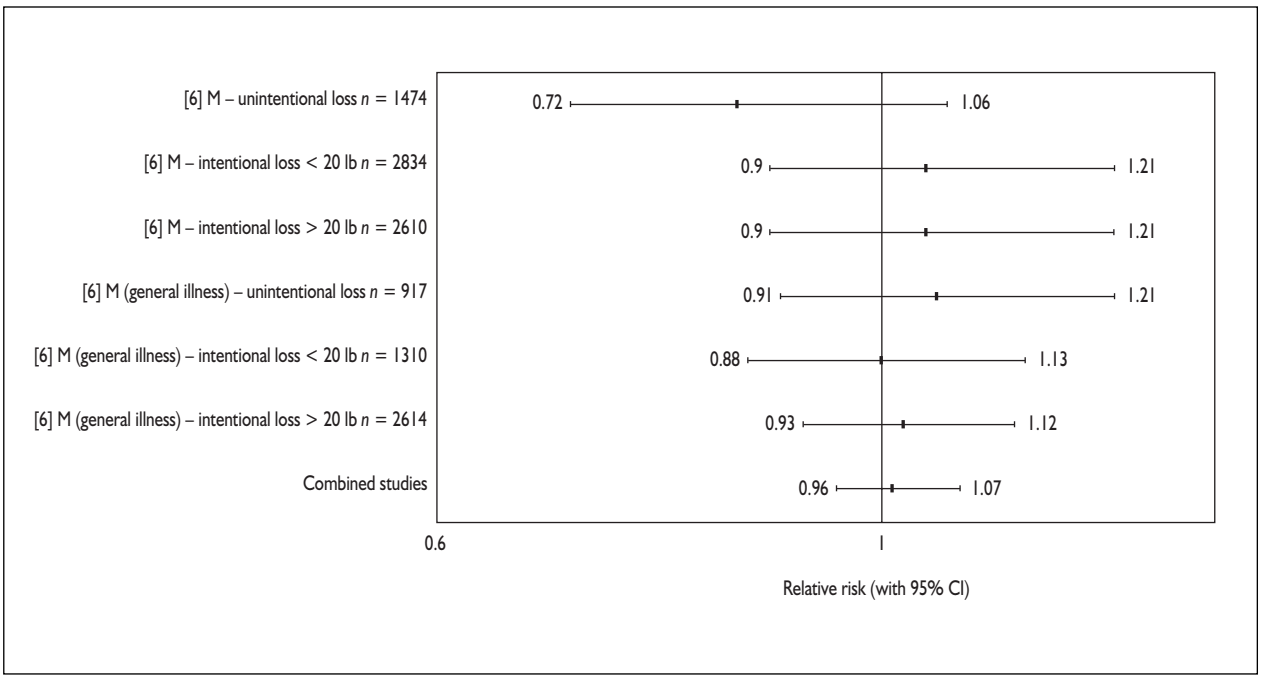


FIGURE 260(b) *Mortality from CVD: men only. Key of [study numbers] given in* Table 27. *Q = 2.93 with 5 df: no reason to reject homogeneity, therefore may combine study results*

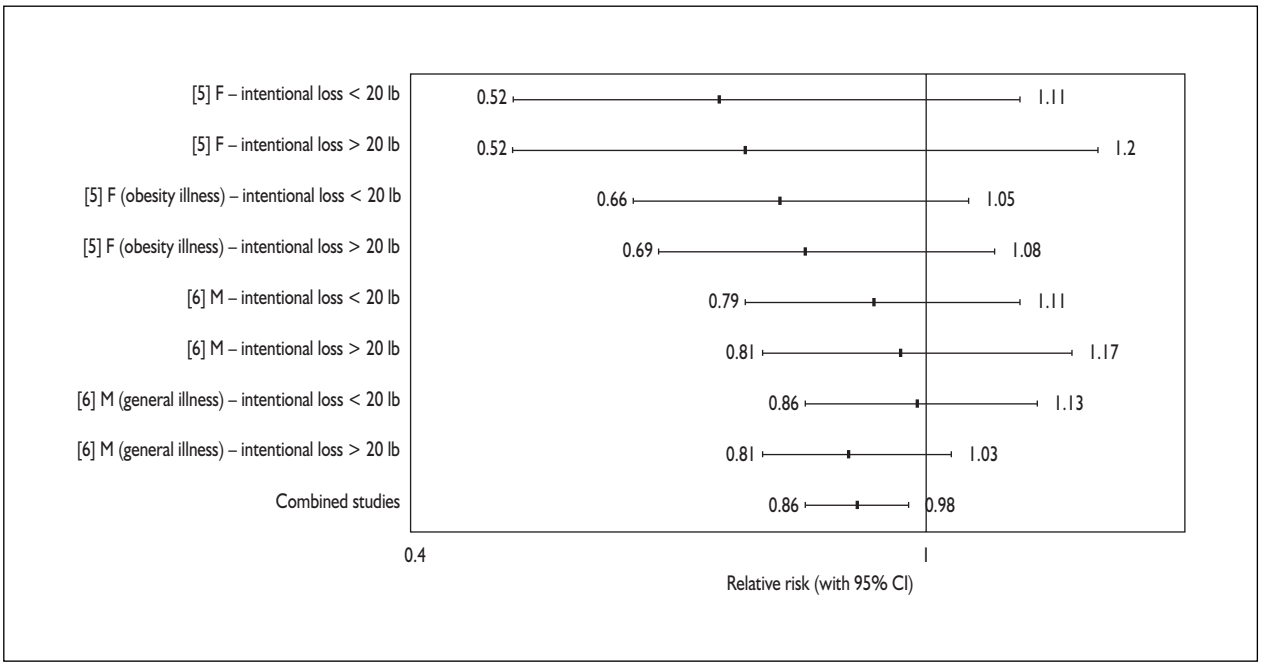


FIGURE 261(a) *Mortality from CVD: weight loss within 1 year. Key of [study numbers] given in* Table 27. *Q = 4.11 with 7df: no reason to reject homogeneity, therefore may combine study results*

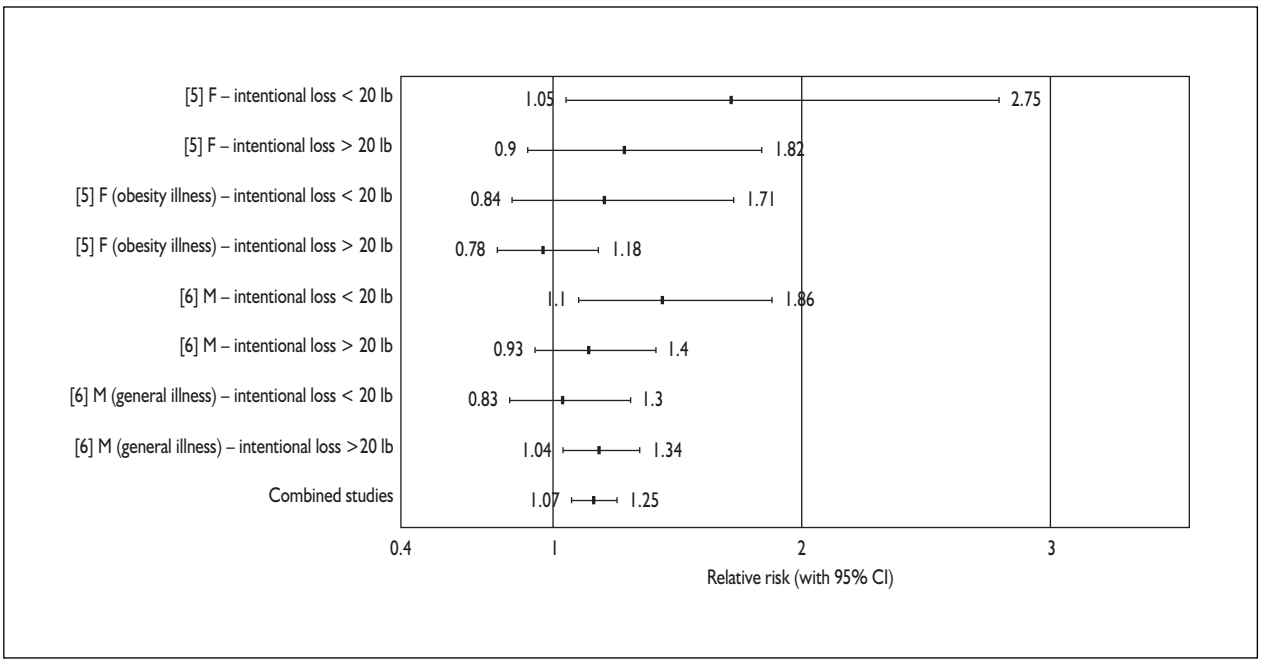


FIGURE 261(b) *Mortality from CVD: weight loss taking more than 1 year. Key of [study numbers] given in* Table 27. *Q = 9.41 with 7 df: no reason to reject homogeneity, therefore may combine study results*

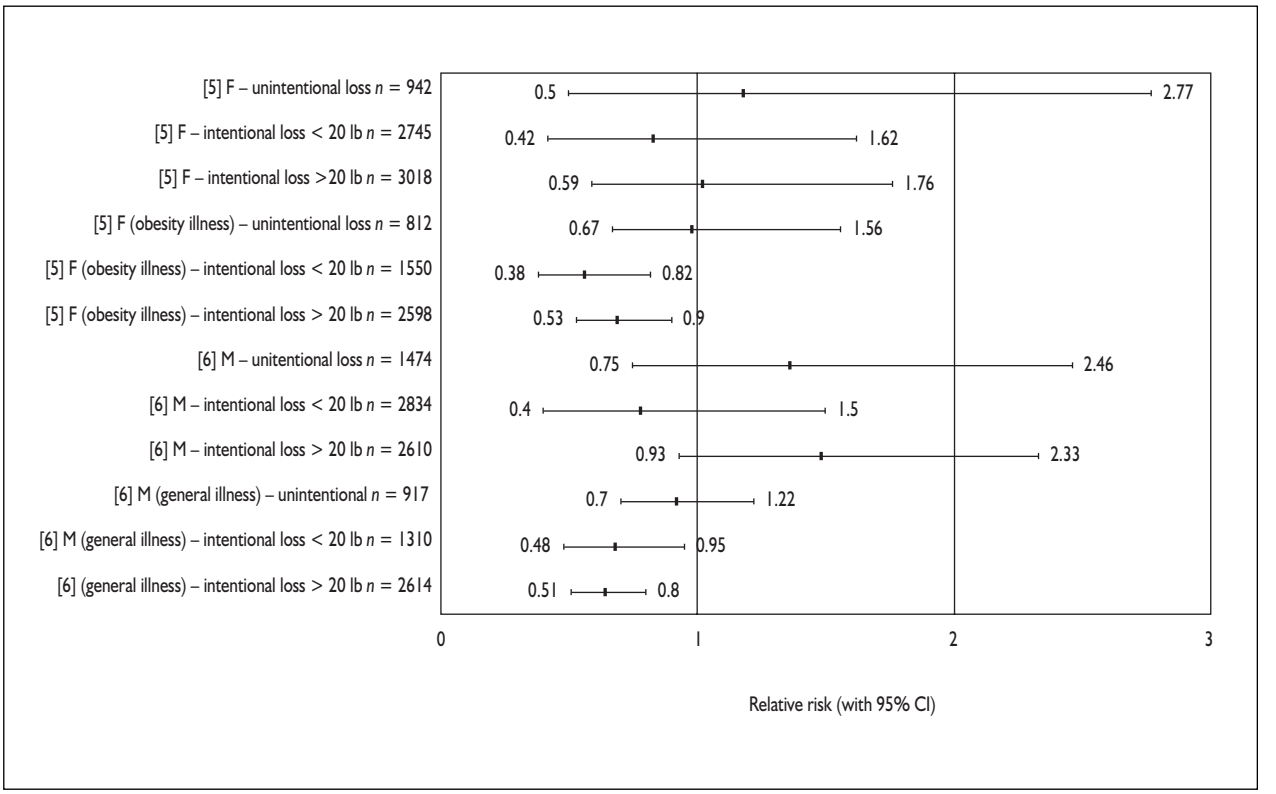


FIGURE 262 *Mortality from diabetes mellitus: all subgroup. Key of [study numbers] given in* Table 27. *Q = 22.423 with 11 df: reject homogeneity at* p *= 0.05*

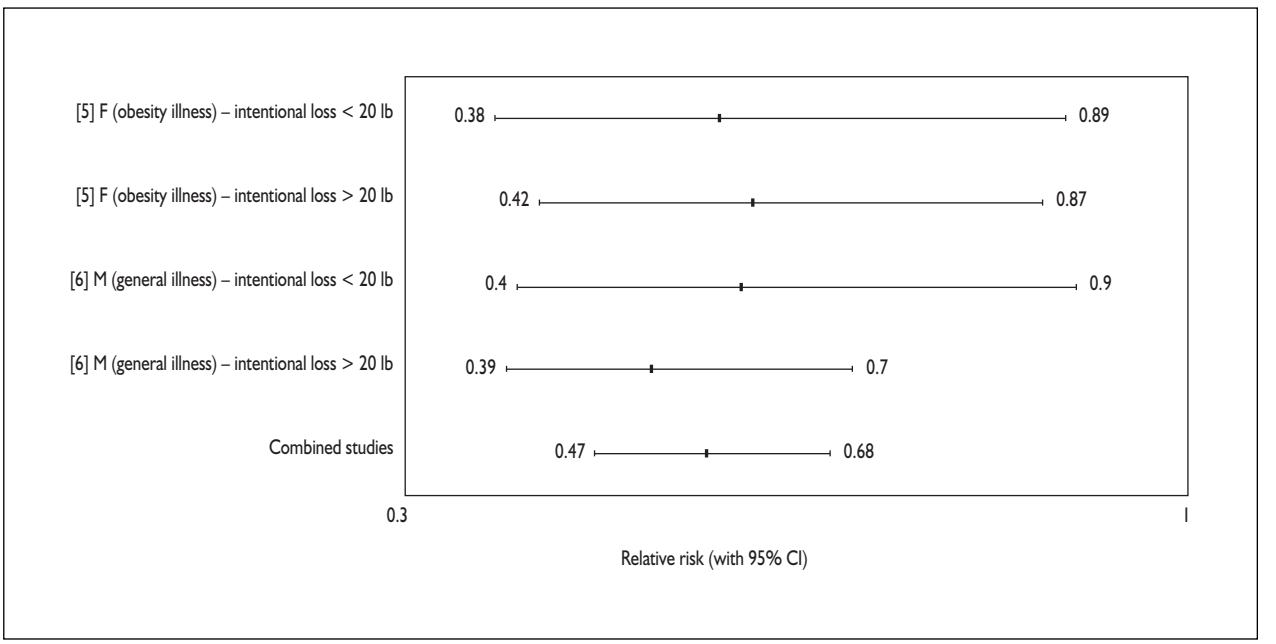


FIGURE 263(a) *Mortality from diabetes mellitus: weight lost within 1 year. Key of [study numbers] given in* Table 27. *Q = 0.58 with 3 df: no reason to reject homogeneity, therefore may combine study results*

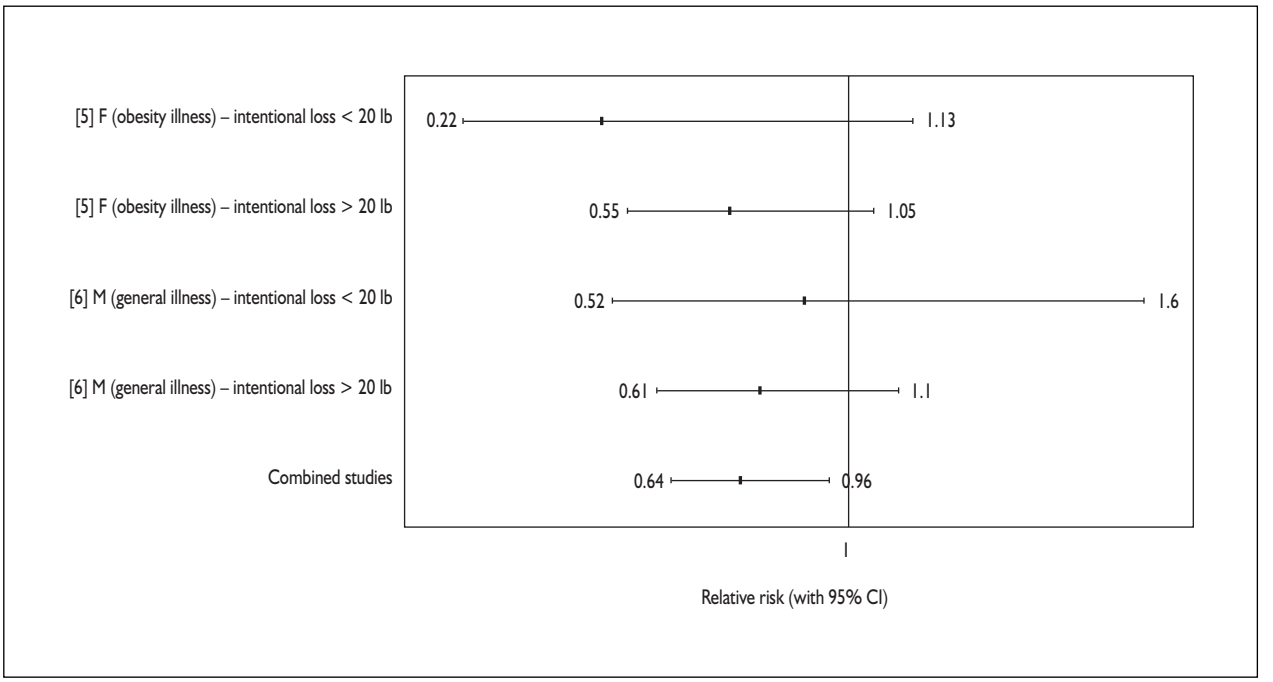


FIGURE 263(b) *Mortality from diabetes mellitus: weight lost over more than 1 year. Key of [study numbers] given in* Table 27. Q = *1.56 with 3 df: no reason to reject homogeneity, therefore may combine study results.*

Appendix 21

Diabetes mellitus studies with basic results

Appendix 21a

Diabetes mellitus ratios

TABLE 28 *Surgical interventions*

Graph key	Study	Genders	Description	Age (years)		Initial weight			Last weight or loss		
				Mean	Spread	*n*	weight	Spread	*n*	weight	Spread
4	Pories, 1992[266]	Both	Morbid obese, 27% DM	18–65		*n* = 515	135 kg	Range kg 89–257	*n* = 236 at 5 year	91 kg	Range 49–195
		Both	Morbid obese, 12% IGT	18–65							
11	O'Leary, 1980[272] (Unknown follow-up at 7 years)	Both	70% NIDDM			*n* = 274	156 kg	Range kg 95–275	All but 2 lost, 5-year plateau some regain 20–30%		
		Both	6% Insulin DM								
20	Hess, 1998[271]	Both	Morbid obese, DM insulin	Whl grp = 40		Whl grp *n* = 440	BMI = 50	BMI Range 25–77	*n* = 92? at 5 year	BMI = 30 Diff –55 kg	
		Both	Morbid obese, DM non-insulin								
28	Long, 1994[279] Non-RCT	Both	IGT (27 did not have surgery)	36	SD = 8.0	*n* = 109	BMI = 48	SD = 8.0	% loss of excess weight at 5 years = 62 (SD 4)		
29	Karason, 1999[277] Non-RCT	Both	Obese	Whl grp = 49	SD = 5.0	*n* = 19	118 kg BMI = 38	SD =15 SD = 3.6	*n* = 19 at 4 year	diff = –22 kg BMI diff = –6.8	SD = 10 SD = 3.5
30	Sjostrom CD, 2000[278] Non-RCT	Both	Obese control	47	SD = 6.0	*n* = 346	121.6 kg BMI = 42.2	SD = 16.6 SD = 4.1	*n* = 251 at 8 year	diff = –20.1 kg BMI diff = –6.8	SD = 15.7 SD = 5.4

Whl grp, whole group; Diff, difference.

TABLE 29 *Non-surgical interventions*

Graph key	Study	Genders	Description	Age (years)		Initial weight			Last weight or loss		
				Mean	Spread	*n*	weight	Spread	*n*	weight	Spread
15	Wing, 1998[176] RCT	Both	Parent(s) DM, patients normal	~45.7	SD = 4.4		BMI ~35.9	SD =4.3	*n* = ?	Lost ≥ 4.5 kg	
		Both	Parent(s) DM, patients IGT	~45.7	SD = 4.4		BMI ~35.9	SD = 4.3	*n* = ?	Lost ≥ 4.5 kg	
16	Watts, 1990[281]	Both	DM – responders	57.4	SD = 1.9	*n* = 55	94 kg	SD = 3.0	*n* = 55 14.7 (SD 2.3) months, took 1 year 50% regained	Lost ≥ 9.1 kg	
		Both	DM – non-responders	55.3	SD = 1.3		94 kg	SD = 2.0	*n* = ? 26.2 (SD 2.3) months, took 1 year 40% regained	Lost ≥ 9.1 kg	
39	Hauptman, 2000[45] RCT – drug	Both	Placebo + diet	41.6	SE = 0.7	*n* = 91	101.0 kg BMI = 36.2	SE = 0.8	*n* = 91 at 2 years	Diff= –1.54 kg	SE = 0.58
		Both	Orlistat + diet	42.6	SE = 0.8	*n* = 117	100.6 kg BMI = 36.2	SE = 1.6	*n* = 117 at 2 years	Diff = –5.16 kg	SE = 0.78
40	Tuomilehto, 2001[168] RCT	Both	DM patients diet + Ex	55	SD = 7.0	*n* = 257	BMI = 31.3	SD = 4.6	*n* = ? at 2 years	Diff = –0.8 kg	SD = 4.4
		Both	DM patients, control	55	SD = 7.0	*n* = 265	BMI = 31.0	SD = 4.5	*n* = ? at 2 years	Diff = –3.5 kg	SD = 5.5
41	Rossner, 2000[37] RCT – drug	Both	Placebo + diet	44.3	SD = 10.8	*n* = 237	97.7 kg BMI = 35.3	SD =14.6 SD = 4.1	*n* = 140 at 2 years	Diff = –4.3 kg	SD = 7.5
		Both	Orlistat + diet	43.6	SD = 11.4	*n* = 242	96.7 kg BMI = 34.7	SD = 11.4 SD = 3.7	*n* = 136 at 2 years	Diff = –7.6 kg	SD = 7.0
42	Davidson, 1999[41] RCT – drug	Both	Placebo + diet	44.0	SE = 0.7	*n* = 223	100.6 kg BMI = 36.5	SE = 0.9 SE = 0.9	*n* = 89 at 2 years	Diff = –4.0 kg	SE = 0.5
		Both	Orlistat + diet	43.3	SE = 0.6	*n* = 657	100.7 kg BMI = 36.2	SE = 0.6 SE = 0.1	*n* = 103 at 2 years	Diff = –7.6 kg	SE = 0.2

TABLE 30 *No intervention*

Graph key	Study	Genders	Description	Age (years)		Initial weight			Last weight or loss		
				Mean	Spread	*n*	weight	Spread	*n*	weight	Spread
13	Ford, 1997[268]	Both?	NIDDM	Whl grp 18–70+			BMI > 29		Lost ≥ 5 kg		
14	Moore, 2000[269]	Both	Lost/gained	40.8		*n* = 102	BMI = 30.4		*n* = 102 Lost ≥ 8 lb in 8 years then gained in next 8 years		
		Both	Lost/stable	41.5		*n* = 109	BMI = 29.3		*n* = 109 Lost ≥ 8 lb in 8 years then stable in next 8 years		
		Both	Lost/lost	41.6		*n* = 51	BMI = 30.8		n = 51 Lost ≥ 8 lb in 8 years then lost more in next 8 years		
		Both[a]	Lost/lost ≥ 8 lb	41.5			BMI = 29.5		*n* = ?? Lost ≥ 8 lb in 8 years + 0–7 lb in next 8 years		
		Both[a]	Lost/lost ≥ 16 lb	41.5			BMI = 30.2		*n* = ?? Lost ≥ 8 lb in 8 years + 8–15 lb in next 8 years		
17	Wannamethee, 1999[280]	M	Not DM	Whl grp 40–59			BMI ≥ 28		Lost ≥ 4%		

[a] Subgroup of the lost/lost group, specifying the degree of weight loss.

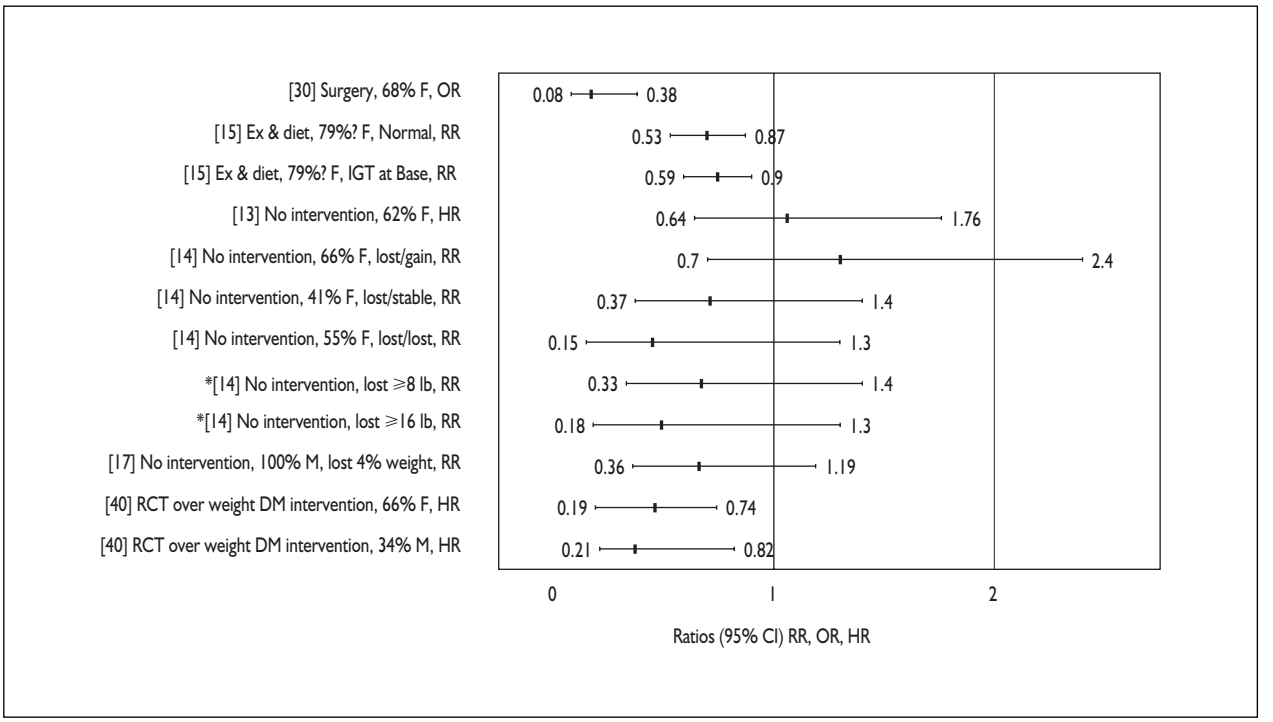


FIGURE 264 *Diabetes mellitus ratios. Key of [study numbers] given in Tables 28–30. * Non-independent subgroup. HR, hazard ratio*

Appendix 21b

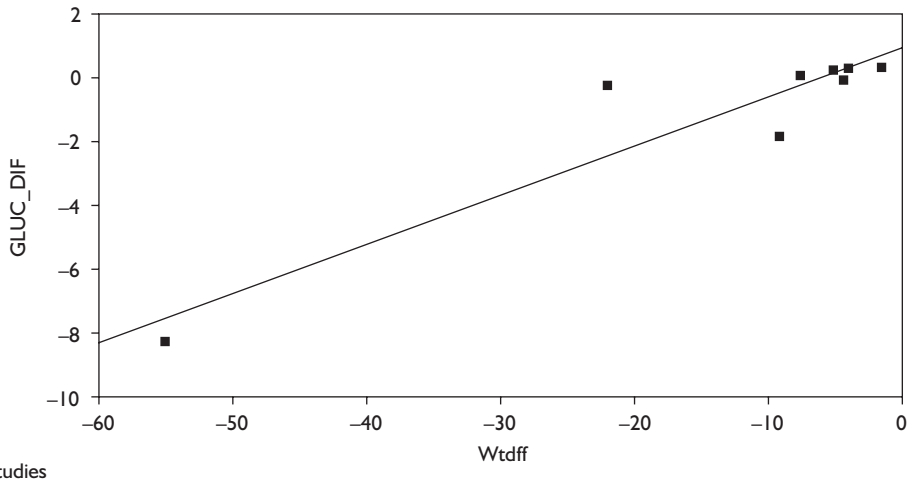
Weight differences compared with glucose differences in type 2 diabetes mellitus patients

Intervention type	Study	Description	Follow-up (months)	*n*	Weight difference (kg)	(SE)	*n*	Glucose difference (mmol/l)	(SE)
??	Watts, 1990[281]	DM non-responders	12+	80	–9.1*	**(0.98)**	80	–1.90*	**(0.15)**
RCT Drug	Hauptman 2000[45]	Placebo + diet	24	91	–1.5*	(0.58)	91	0.24	**(0.14)**
		Orlistat + diet	24	117	–5.2*	(0.78)	117	0.16	**(0.12)**
	Rossner, 2000[37]	Placebo + diet	24	140	–4.3*	(0.63)	140	–0.14	**(0.11)**
		Orlistat + diet	24	136	–7.6*	(0.60)	136	–0.07	**(0.12)**
	Davidson, 1999[41]	Placebo + diet	24	89	–4.0*	(0.50)	90	0.20	**(0.14)**
		Orlistat + diet	24	103	–7.6*	(0.20)	106	0.05	**(0.13)**
Surgery	Hess, 1998[271]	DM insulin & non	60	92	–55.0*	**(2.44)**		–8.25[a]	
	Long, 1994[279]	Non-RCT, IGT	60					–1.00	
	Karason, 1999[277]	Obese only	48	19	–22.0*	(2.29)	19	–0.30	**(0.23)**

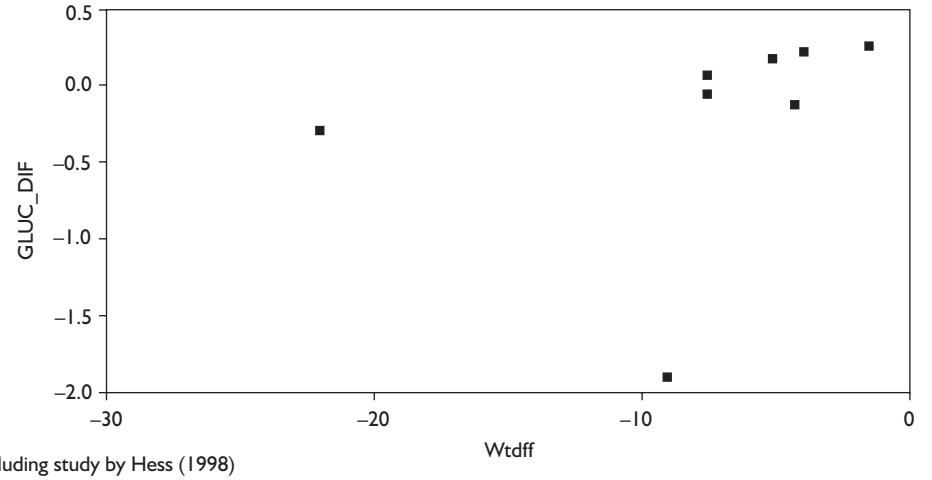
Standard errors in **bold** have been estimated as per Appendix 26.
[a] This study seems to have a large glucose difference. It may not be fasting blood sugar.
*Significant difference at $p < 0.05$.

Scatter plots: glucose difference with weight difference

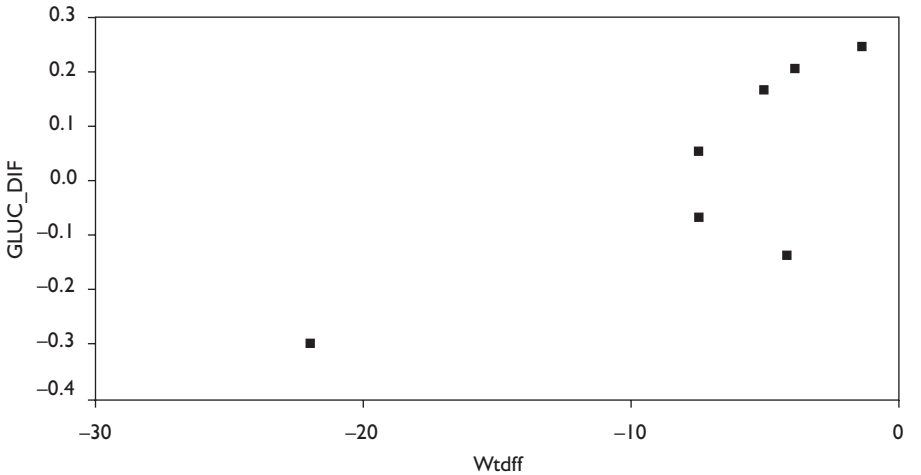
SPSS variable names: Wtdff, average weight difference subgroups; GLU_DIF, average glucose difference



(a) All studies
Correlation = 0.935 ($p < 0.001$)



(b) Excluding study by Hess (1998)
Correlation = 0.296



(c) Excluding studies by Hess (1998) and Watts (1990)
Correlation = 0.794 ($p < 0.01$)

Regression: glucose difference with weight difference (excluding Hess and Watts)

Model summary

Model	R	R^2	Adjusted R^2	SE of the estimate
1	0.794[a]	0.631	0.557	0.1324

[a] Predictors: (Constant), Wtdff.

ANOVA[a]

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	0.150	1	0.150	8.544	0.033[b]
Residual	8.764E^{-02}	5	1.753E^{-02}		
Total	0.237	6			

[a] Dependent variable: GLUC_DIF.
[b] Predictors: (Constant), Wtdff.

Coefficients[a]

	Unstandardised coefficients		Standardised coefficients		
Model	B	SE	β	t	Sig.
1 (Constant)	0.194	0.078		2.497	0.055
Wtdff	2.339E^{-02}	0.008	0.794	2.923	0.033

[a] Dependent variable: GLUC_DIF.

Conclusion: *glucose difference = 0.194 + 0.02339 (weight difference).*

Appendix 22

Lipid results

Appendix 22a

Lipid paired *t*-test results

TABLE 31 *Non-surgical weight cyclers*

Study	Follow-up (months)		*n*	Wt diff (kg)	(SE)	*n*	Cholesterol diff (mmol/l)	(SE)	*n*	TGs diff (mmol/l)	(SE)	*n*	LDL diff (mmol/l)	(SE)	*n*	HDL diff (mmol/l)	(SE)
Wing, 1995[282]	30	Gainer	15	10.30*	**(2.36)**	15	0.33	**(0.28)**	15	0.93*	**(0.40)**	15	–0.04	**(0.19)**	15	–0.06	**(0.07)**
		Stable	25	3.00*	**(1.36)**	25	0.14	**(0.22)**	25	0.18	**(0.31)**	25	0.05	**(0.15)**	25	0.00	**(0.06)**
		L cyc	31	–2.10	**(1.17)**	31	–0.34	**(0.19)**	31	–0.01	**(0.27)**	31	–0.29*	**(0.13)**	31	–0.01	**(0.05)**
		S cyc	28	–2.60	**(1.26)**	28	0.11	**(0.20)**	28	0.33	**(0.29)**	28	0.02	**(0.14)**	28	–0.07	**(0.06)**
		P cyc	28	–9.70*	**(1.69)**	28	–0.4	**(0.20)**	28	–0.38	**(0.29)**	28	–0.34*	**(0.14)**	28	0.10	**(0.06)**
		S succ	7	–5.90	**(2.92)**	7	0.11	**(0.41)**	7	–0.10	**(0.58)**	7	–0.01	**(0.28)**	7	0.17	**(0.11)**
		L succ	14	–12.60*	**(2.63)**	14	–0.23	**(0.29)**	14	–0.29	**(0.41)**	14	–0.2	**(0.18)**	14	0.09	**(0.08)**

* Significant difference at $p < 0.05$.
Bold standard errors indicate studies where the mean differences were estimated from *follow-up mean – base mean*. Standard errors were also estimated as in Appendix 26.

TABLE 32 *Non-surgical prospective/cohort*

Study	Follow-up (months)		*n*	Wt diff (kg)	(SE)	*n*	Cholesterol diff (mmol/l)	(SE)	*n*	TGs diff (mmol/l)	(SE)	*n*	LDL diff (mmol/l)	(SE)	*n*	HDL diff (mmol/l)	(SE)
Kauffman, 1992[283]	24	Spanish workplace	80	–2.20*	(0.40)	80	$r = 0.24$ $p = 0.01$										
Ewbank, 1995[284]	24	Total group	45	–13.00*	(1.79)	43	–0.60*	(0.12)							43	–0.20*	(0.05)
		Low Ex	15	–9.00*	(2.32)	15	–0.30	(0.26)							15	–0.20*	(0.08)
		Mod Ex	15	–9.00*	(3.01)	14	–0.40*	(0.16)							14	–0.10	(0.08)
		High Ex	15	–20.00*	(2.58)	14	–0.10*	(0.19)							14	–0.20*	(0.08)
Sjostrom M, 1999[285] (raw data)	24	Women	323	–1.44*	(0.40)	333	–0.02	(0.06)	319	–0.03	(0.06)				24	–0.18 *	(0.04)
		Men	221	–2.7*	(0.56)	220	–0.26*	(0.09)	213	–0.31	(0.19)				11	0.00	(0.09)

* Significant difference at $p < 0.05$.

TABLE 33 *Non-surgical RCTs*

Study (Follow-up time)	Follow-up (months)		*n*	Wt diff (kg)	(SE)	*n*	Cholesterol diff (mmol/l)	(SE)	*n*	TGs diff (mmol/l)	(SE)	*n*	LDL diff (mmol/l)	(SE)	*n*	HDL diff (mmol/l)	(SE)
Wing, 1998[176]	24	Diet + BT	35	–2.10	(1.28)	35	–0.12	(0.10)	35	0.19	(0.41)	35	–0.16	(0.11)	35	0.02	(0.03)
		Ex + BT	31	1.00	(0.84)	31	0.33*	(0.11)	31	0.33	(0.26)	31	0.22	(0.11)	31	0.05	(0.03)
		Diet + Ex + BT	32	–2.50	(1.48)	32	0.09	(0.12)	32	–0.28	(0.24)	32	0.12	(0.10)	32	0.02	(0.04)
Hauptman, 2000[45]	24	Placebo + diet	91	–1.54*	(0.58)	91	0.08	**(0.11)**	91	–0.19	**(0.16)**	91	0.17*	**(0.08)**	91	–0.01	**(0.03)**
		Orlistat + diet	117	–5.16*	(0.78)	117	–0.15	**(0.10)**	117	–0.09	**(0.14)**	117	–0.15	**(0.07)**	117	0.00	**(0.03)**
Davidson, 1999[41]	24	Placebo + diet	89	–4.00*	**(0.50)**	89	–0.22	**(0.11)**	89	0.03	**(0.16)**	88	–0.22*	**(0.08)**	89	0.03	**(0.03)**
		Orlistat + diet	103	–7.60*	**(0.20)**	106	–0.32*	**(0.11)**	106	–0.12	**(0.15)**	104	–0.24*	**(0.07)**	106	–0.01	**(0.03)**
Teupe, 1991[84]	24	Metformin + diet		25	–4.00*	**(1.42)**	25	–0.39	**(0.22)**	25	–0.25	**(0.31)**					
		Diet	29	–5.10*	**(1.39)**	29	0.46*	**(0.20)**	29	–0.27	**(0.28)**						

* Significant difference at $p < 0.05$.
Bold standard errors indicate studies where the mean differences were estimated from *follow-up mean – base mean*. Standard errors were also estimated as in Appendix 26.

TABLE 34 *Surgical*

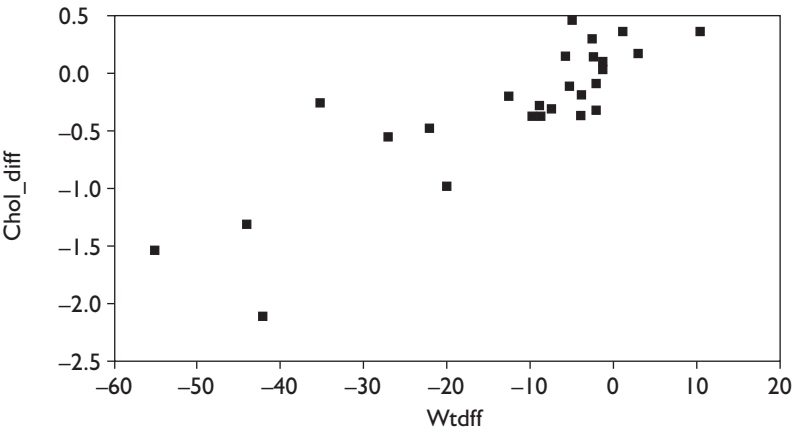
Study (Follow-up time)	Follow-up (months)		*n*	Wt diff (kg)	(SE)	*n*	Cholesterol diff (mmol/l)	(SE)	*n*	TGs diff (mmol/l)	(SE)	*n*	LDL diff (mmol/l)	(SE)	*n*	HDL diff (mmol/l)	(SE)
Hess, 1998[271]	60	78% Women	92	–55.00*	**(2.44)**	92	–1.55*	**(0.11)**	92	–0.98*	**(0.16)**	92	–0.98*	**(0.08)**	92	0.13	**(0.03)**
Gleysteen, 1992[286]	60	Women	24	–35.00*	**(3.47)**	24	–0.28	**(0.22)**	24	–0.11	**(0.31)**	24			24	0.26*	**(0.06)**
		Men	9	–27.00*	**(4.82)**	9	–0.57	**(0.36)**	9	–0.84	**(0.51)**	9			9	0.26*	**(0.10)**
Rossner, 1980[287]	24–60	Women	10	–44.00*	(4.00)	10	–1.33*	**(0.34)**	10	–0.34	**(0.48)**	10	–1.17*	**(0.23)**	10	0.05	**(0.09)**
		Men	8	–42.00*	(4.00)	8	–2.12*	**(0.38)**	8	–1.12	**(0.54)**	8	–1.47*	**(0.26)**	8	–0.08	**(0.10)**
Karason, 1999[277]	48	21% Women	19	–22.00*	(2.29)	19	–0.50 *	(0.16)	19	–0.90*	(0.21)	19	–0.40*	(0.16)	19	0.20*	(0.07)
O'Leary[272] 1980	5 years	Both	274	All but 2/274 lost weight. Plateau at 12–24 months after surgery with some weight regain by 5 years													
							Preoperative			5 years							
				Hypertriglyceridaemia			51%			88% improved, 12% unchanged							
				Hypercholesterolaemia			8%			All improved							

Appendix 22b

Weight differences compared with lipid differences

(i) Regression: weight difference versus cholesterol

SPSS variable names: Wtdff, average weight difference; Chol_diff, average cholesterol difference



Model summary[a]

Model	*R*	R^2	Adjusted R^2	SE of the estimate
1	0.856[b]	0.732	0.722	0.31450

[a] Dependent variable: Chol_diff.
[b] Predictors: (Constant), Wtdff.

ANOVA[a]

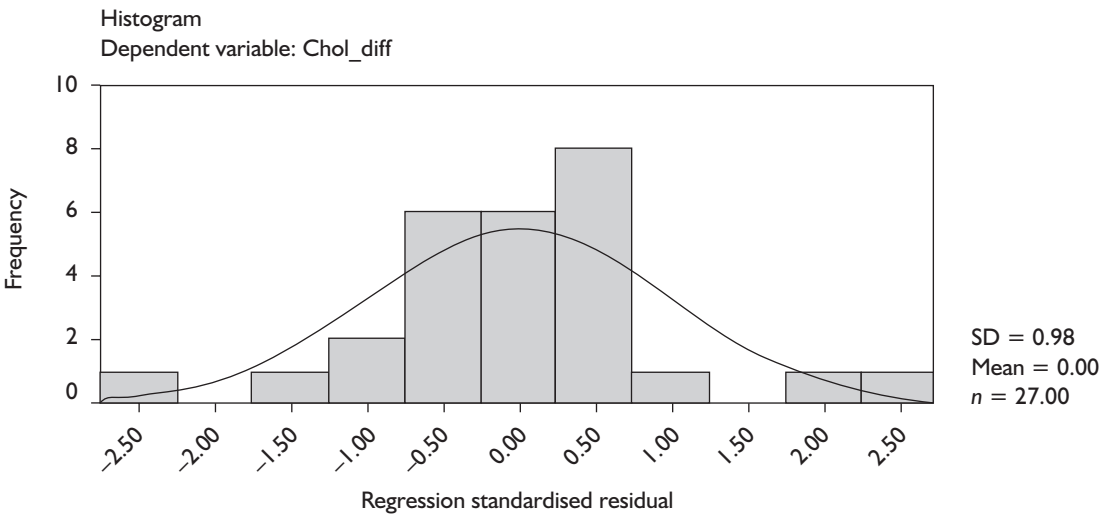
Model	Sum of squares	df	Mean square	*F*	Sig.
1 Regression	6.765	1	6.765	68.395	0.000[b]
Residual	2.473	25	0.099		
Total	9.237	26			

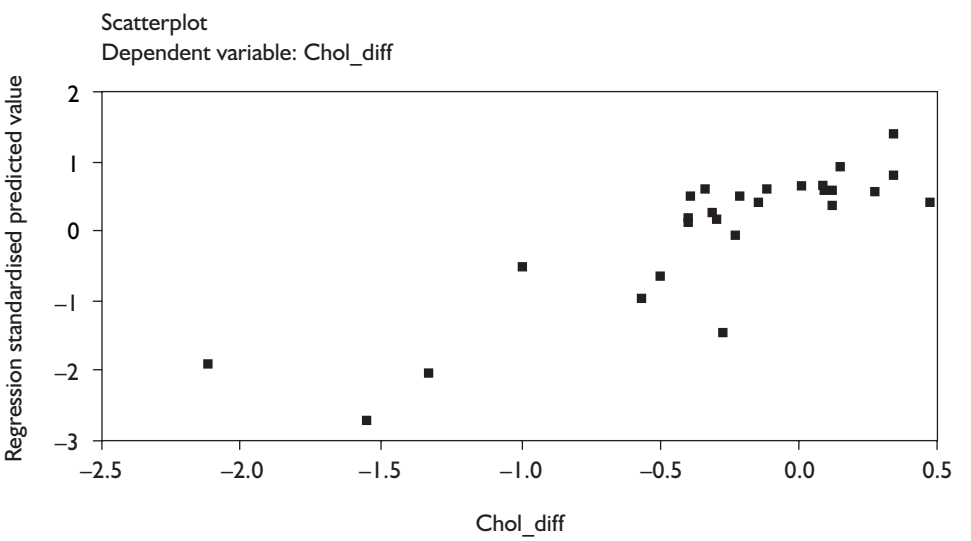
[a] Dependent variable: Chol_diff.
[b] Predictors: (Constant), Wtdff.

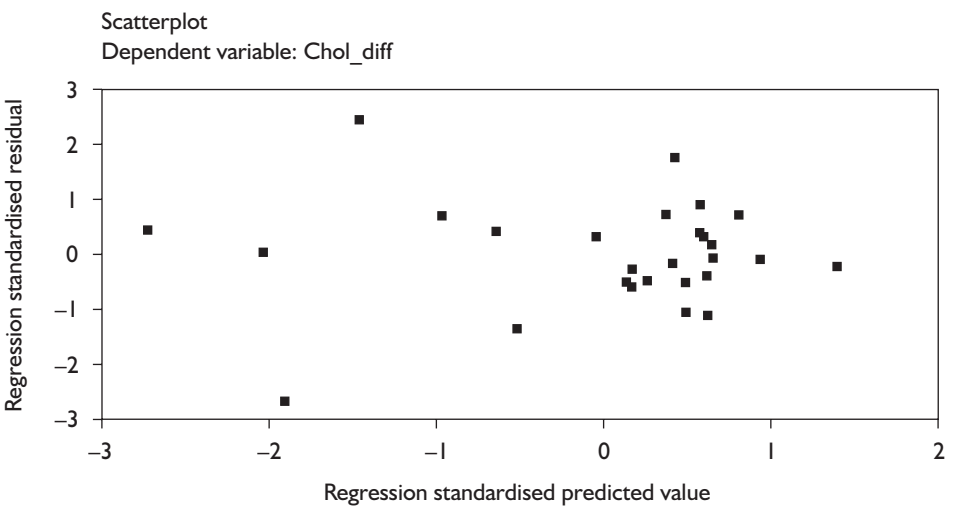
Coefficients[a]

	Unstandardised coefficients		Standardised coefficients		
Model	*B*	SE	β	*t*	Sig.
1 (Constant)	$7.009E^{-02}$	0.076		0.924	0.364
Wtdff	$3.210E^{-02}$	0.004	0.856	8.270	0.000

[a] Dependent variable: Chol_diff.

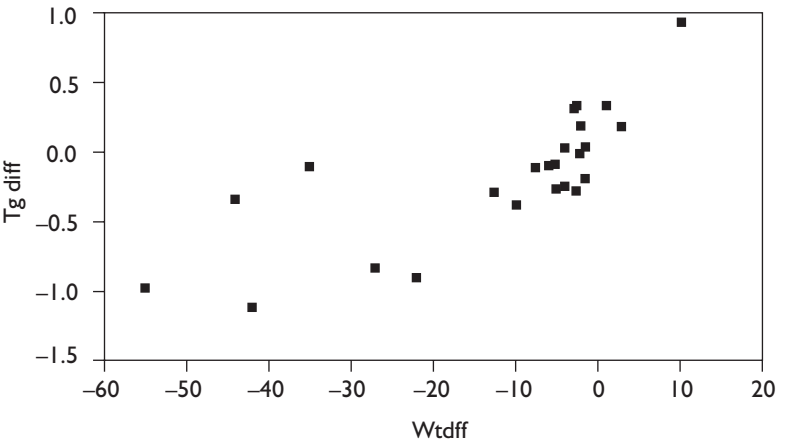

Histogram
Dependent variable: Chol_diff
Frequency
Regression standardised residual
SD = 0.98
Mean = 0.00
n = 27.00


Scatterplot
Dependent variable: Chol_diff
Regression standardised predicted value
Chol_diff


Scatterplot
Dependent variable: Chol_diff
Regression standardised residual
Regression standardised predicted value

(ii) Regression: weight difference versus TGs

SPSS variable names: Wtdff, average weight difference; Tg diff, average triglycerides difference



Model summary[a]

Model	R	R^2	Adjusted R^2	SE of the estimate
1	0.764[b]	0.584	0.565	0.30653

[a] Dependent variable: Tg diff.
[b] Predictors: (Constant), Wtdff.

ANOVA[a]

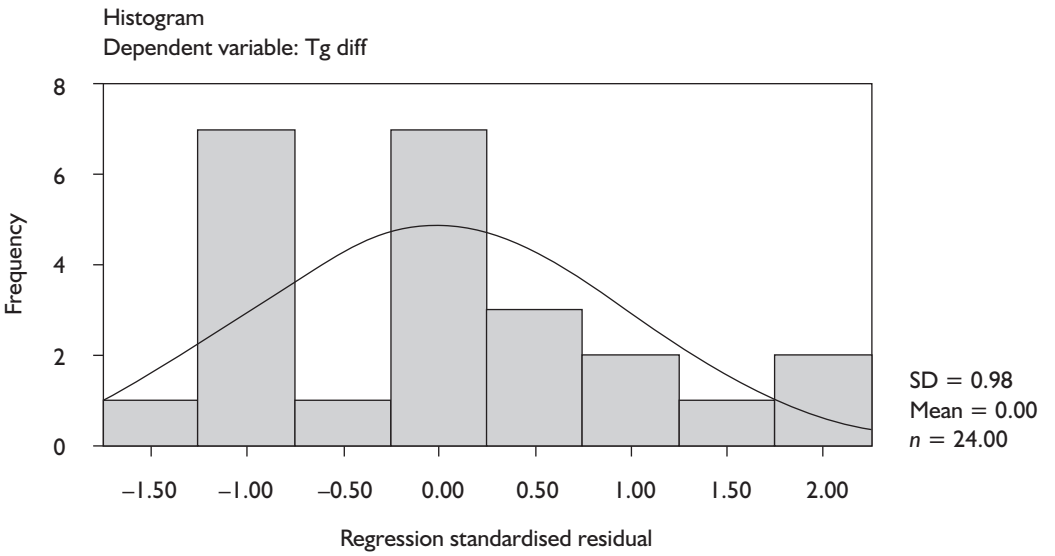
Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	2.905	1	2.905	30.913	0.000[b]
Residual	2.067	22	0.094		
Total	4.972	23			

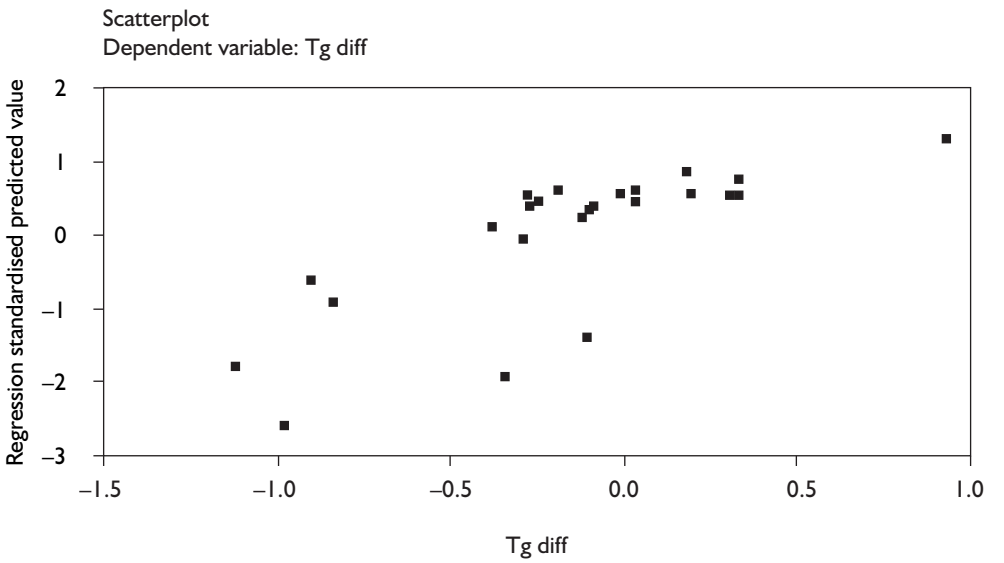
[a] Dependent variable: Tg diff.
[b] Predictors: (Constant), Wtdff.

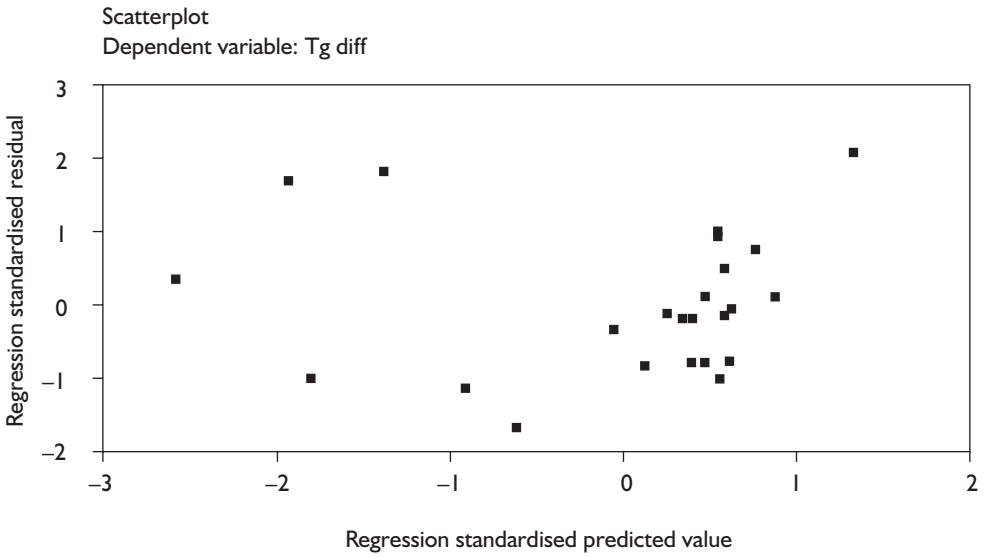
Coefficients[a]

	Unstandardised coefficients		Standardised coefficients		
Model	B	SE	β	t	Sig.
1 (Constant)	8.265E^{-02}	0.077		1.077	0.293
Wtdff	2.117E^{-02}	0.004	0.764	5.560	0.000

[a] Dependent variable: Tg diff.

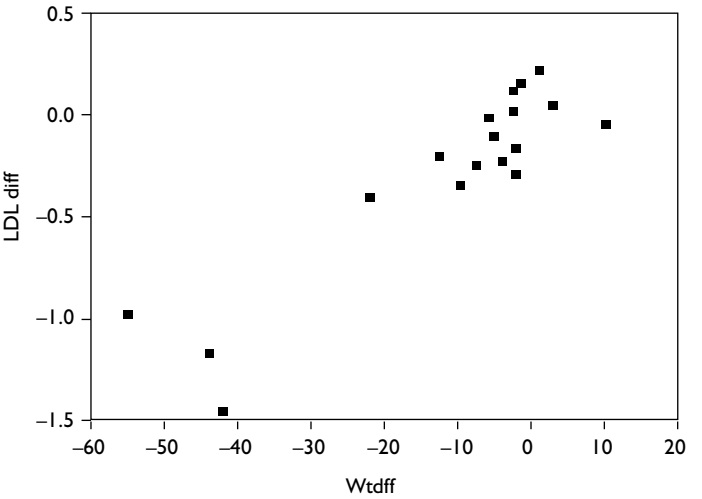

Histogram
Dependent variable: Tg diff
Frequency
8
6
4
2
0
–1.50
–1.00
–0.50
0.00
0.50
1.00
1.50
2.00
Regression standardised residual
SD = 0.98
Mean = 0.00
n = 24.00


Scatterplot
Dependent variable: Tg diff
Regression standardised predicted value
2
1
0
–1
–2
–3
–1.5
–1.0
–0.5
0.0
0.5
1.0
Tg diff


Scatterplot
Dependent variable: Tg diff
Regression standardised residual
3
2
1
0
–1
–2
–3
–2
–1
0
1
2
Regression standardised predicted value

(iii) Regression: weight difference versus LDL

SPSS variable names: Wtdff, average weight difference; LDL diff, average LDL difference



Model summary[a]

Model	*R*	R^2	Adjusted R^2	SE of the estimate
1	0.903[b]	0.816	0.804	0.20675

[a] Dependent variable: LDL diff.
[b] Predictors: (Constant), Wtdff.

ANOVA[a]

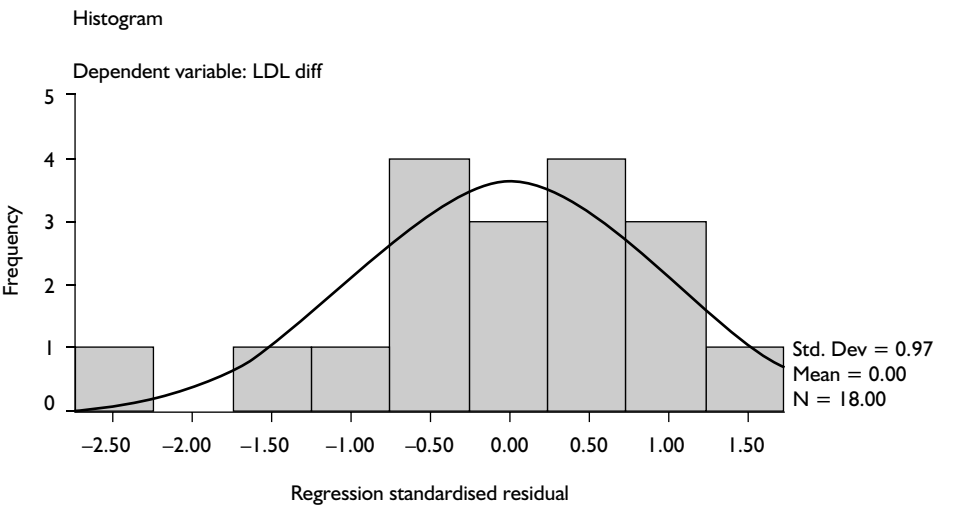
Model	Sum of squares	df	Mean square	*F*	Sig.
1 Regression	3.024	1	3.024	70.740	0.000[b]
Residual	0.684	16	0.043		
Total	3.708	17			

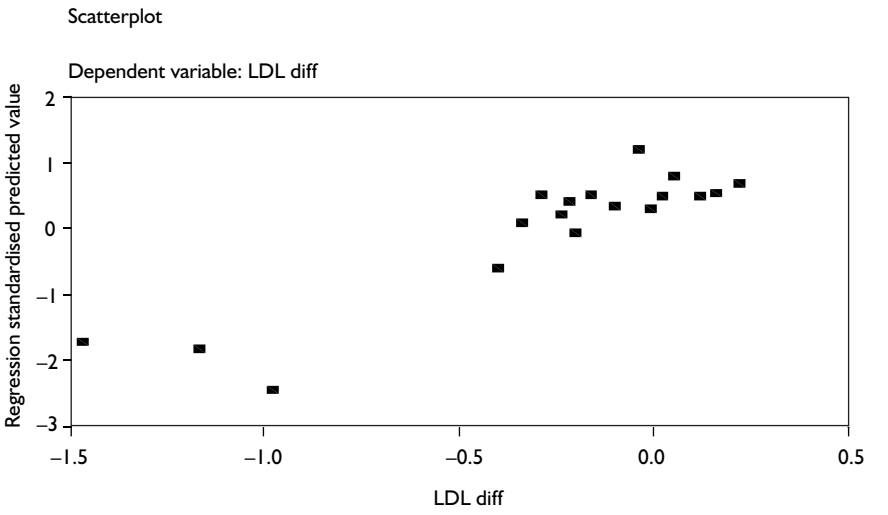
[a] Dependent variable: LDL diff.
[b] Predictors: (Constant), Wtdff.

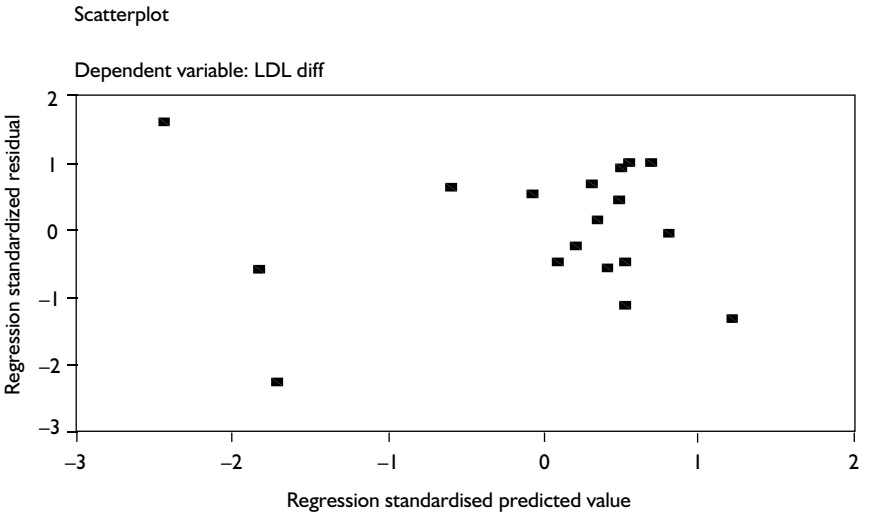
Coefficients[a]

	Unstandardised coefficients		Standardised coefficients		
Model	*B*	SE	β	*t*	Sig.
1 (Constant)	–1.206E^{-02}	0.058		–0.207	0.839
Wtdff	2.363E^{-02}	0.003	0.903	8.411	0.000

[a] Dependent variable: LDL diff.


Histogram
Dependent variable: LDL diff
Frequency
5
4
3
2
1
0
Std. Dev = 0.97
Mean = 0.00
N = 18.00
–2.50
–2.00
–1.50
–1.00
–0.50
0.00
0.50
1.00
1.50
Regression standardised residual

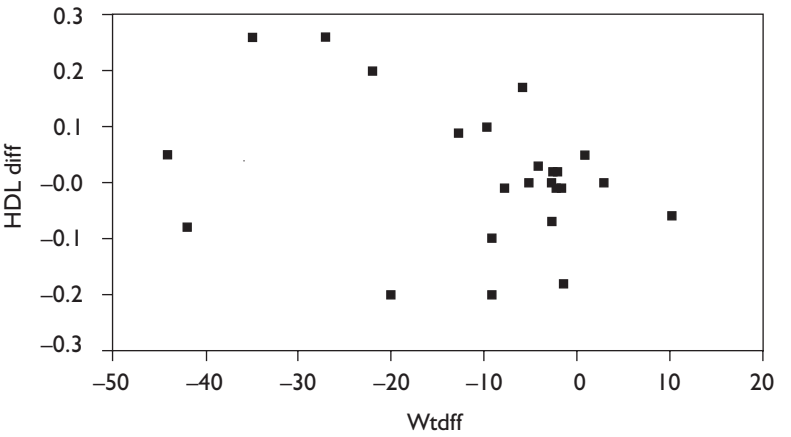

Scatterplot
Dependent variable: LDL diff
Regression standardised predicted value
2
1
0
–1
–2
–3
–1.5
–1.0
–0.5
0.0
0.5
LDL diff


Scatterplot
Dependent variable: LDL diff
Regression standardized residual
2
1
0
–1
–2
–3
–3
–2
–1
0
1
2
Regression standardised predicted value

(iv) Regression: weight difference versus HDL

SPSS variable names: Wtdff, average weight difference; HDL diff, average HDL difference

Pearson correlation = –0.308, $p > 0.05$



Appendix 23

Hypertension results

Appendix 23a

Weight differences compared with blood pressure differences for diastolic and systolic blood pressure

Intervention type		Study	Description	Follow-up months	*n*	Weight diff (kg)	(SE)	*n*	DBP diff (mmHg)	(SE)	*n*	SBP diff (mmHg)	(SE)
Prospective cohort	Part *i*	Wing, 1995[282]	Gainers	30	15	+10.30*	**(2.36)**	15	+1.5	**(2.14)**	15	–1.30	**(4.39)**
			Stable	30	25	+3.00*	**(1.36)**	25	+3.5*	**(1.66)**	25	–0.40	**(3.40)**
			Large cyclers	30	31	–2.10	**(1.17)**	31	–2.2	**(1.49)**	31	–3.10	**(3.05)**
			Small cyclers	30	28	+2.60	**(1.26)**	28	5.0*	**(1.57)**	28	0.40	**(3.21)**
			Partial cyclers	30	28	–9. 70*	**(1.69)**	28	–5.1*	**(1.57)**	28	–10.00*	**(3.21)**
			Small successes	30	7	–5.90	**(2.92)**	7	–2.4	**(3.14)**	7	–4.60	**(6.43)**
			Large successes	30	14	–12.6*	**(2.63)**	14	–4.1	**(2.22)**	14	–2.50	**(4.54)**
	Part *ii* (a)	Sjostrom M, 1999[285] (raw data)	CVD risk women	60	323	–1.44*	(0.40)	321	–5.0*	(0.76)	323	–6.00*	(1.15)
			CVD risk men	60	221	–2.70*	(0.56)	221	–2.94*	(0.86)	221	–3.66*	(1.40)
	(b)	Kauffmann, 1992[283]	Spanish workplace	24	80	–2.20*	(0.40)				80	$r = 0.2$	$p = 0.015$
RCT – diet & Ex	Part *iii* (a)	Wing, 1998[176]	Diet + BT	24	35	–2.10	(1.28)	35	+3.0 *	(1.32)	35	–0.80	(1.59)
			Ex + BT	24	31	1.00	(0.84)	31	+2.0	(1.44)	31	+0.90	(2.50)
			Diet, Ex + BT	24	32	–2.50	(1.48)	32	–0.2	(1.86)	32	–4.80	(2.54)
RCT – drug	Part *iii* (b)	Hauptman, 2000[45]	Placebo + diet	24	91	–1.54*	(0.58)	91	+1.0	**(0.87)**	91	+3.00	**(1.78)**
			Orlistat + diet	24	117	–5.16*	(0.78)	117	–1.0	**(0.77)**	117	0.00	**(1.57)**
		Rossner, 2000[37]	Placebo + diet	24	140	–4.30*	(0.63)	140	–2.7*	**(0.70)**	140	–5.10*	**(1.44)**
			Orlistat + diet	24	136	–7.60*	(0.60)	136	–2.6*	**(0.71)**	136	–6.10*	**(1.46)**
		Teupe, 1991[84]	Metformin + diet	24	25	–4.00*	**(1.42)**	25	–6.0*	**(1.66)**	25	–10.00*	**(3.40)**
			diet	24	29	–5.10*	**(1.39)**	29	–5.0*	**(1.54)**	29	–14.00*	**(3.16)**
Surgical	Part *iv*	Karason, 1999[277]	21% women	48	19	–22.0*	(2.29)	19	–10.0*	(2.75)	19	–18.00*	(4.82)
		Sjostrom C, 2000[278]	SOS	96	251	–20.1*	(0.99)	251	–1.9*	(0.90)	251	+2.90*	(1.39)
		Carson, 1994[263]	HT grp > 90 mmHg	48	18	–40.5*	(5.00)	18	–3.0	**(1.96)**			
			Norm HT	48	34	–79.8*	(5.50)	34	–4.6*	(1.90)	34	–10.70*	(3.60)
		Kunesova, 1998[262]	drug/BT/surgery(?)	24–60	103	–7.09*	(1.48)	103	–4.86*	**(0.82)**	103	–5.56*	**(1.68)**

Bold text standard errors indicate studies where the mean differences were estimated from *follow-up mean – base mean*. Standard errors were also estimated as in Appendix 26.
HT, hypertension.
* *Follow-up – baseline* paired *t*-test significance at $p < 0.05$.

Appendix 23b

Weight differences compared with diastolic blood pressure differences

Pearson correlations for DBP difference with weight difference variables

DBP difference	Follow-up (months)	All subgroups			Extreme initial weight and weight losses excluded		
		Initial weight (kg)	Weight diff (kg)	% weight diff	Initial weight (kg)	Weight diff (kg)	% weight diff
Correlation *r*	–0.281	–0.293	0.407	0.468*	–0.283	0.675**	0.698**
p-Value (2-tailed)	0.194	0.175	0.054	0.024	0.214	0.001	0.000
n	23	23	23	23	21	21	21

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Pearson correlations for % DBP difference with weight difference variables

% DBP difference	Follow-up (months)	All subgroups			Extreme initial weight and weight losses excluded		
		Initial weight (kg)	Weight diff (kg)	% weight diff	Initial weight (kg)	Weight diff (kg)	% weight diff
Correlation *r*	–0.071	–0.178	0.463	0.587*	–0.213	0.780**	0.778**
p-Value (2-tailed)	0.802	0.525	0.082	0.021	0.465	0.001	0.001
n[a]	15	15	15	15	14	14	14

[a] Some studies had no baseline blood pressures given, so % DBP could not be calculated; hence $n = 15$ and $n = 14$.
* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

(i) DBP difference with weight difference (excluding > 40 kg absolute weight loss)

Diff in DBP = –0.299 + 0.340 (wt diff), i.e. –10 kg → 3.7 mmHg drop in DBP

SPSS variable names: MISWTD, average weight difference excluding extreme subgroups; DIADIFF, average DBP difference

Model summary[a]

Model	R	R^2	Adjusted R^2	SE of the estimate
1	0.675[b]	0.456	0.428	2.76781

[a] Dependent variable: DIADIFF.
[b] Predictors: (Constant), MISWTD.

ANOVA[a]

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	122.189	1	122.138	15.943	0.001[b]
Residual	145.554	19	7.661		
Total	267.693	20			

[a] Dependent variable: DIADIFF.
[b] Predictors: (Constant), MISWTD.

Coefficients[a]

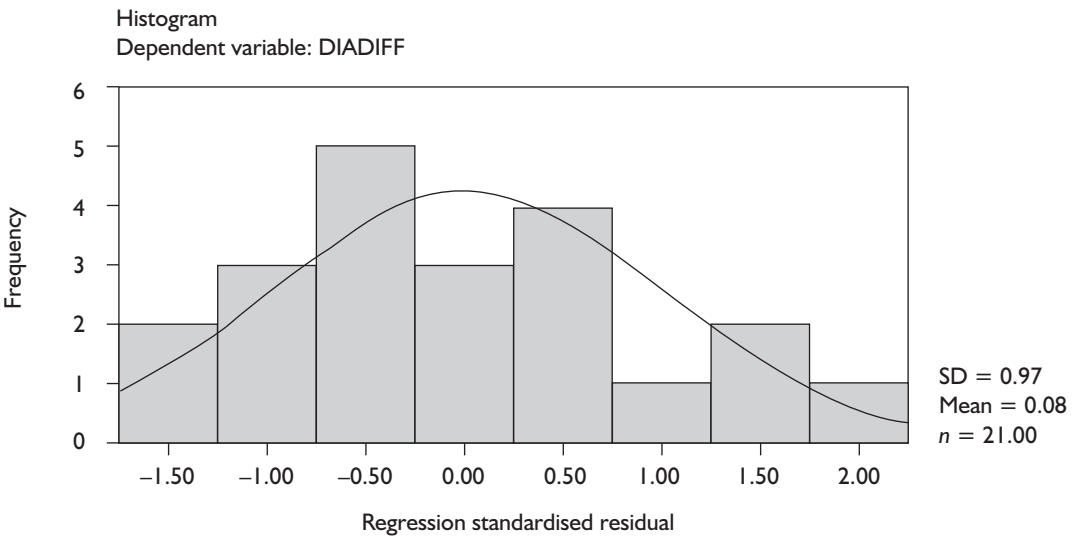
	Unstandardised coefficients		Standardised coefficients		
Model	B	SE	β	t	Sig.
1 (Constant)	–0.299	0.726		–0.412	0.685
MISWTD	0.340	0.085	0.675	3.993	0.001

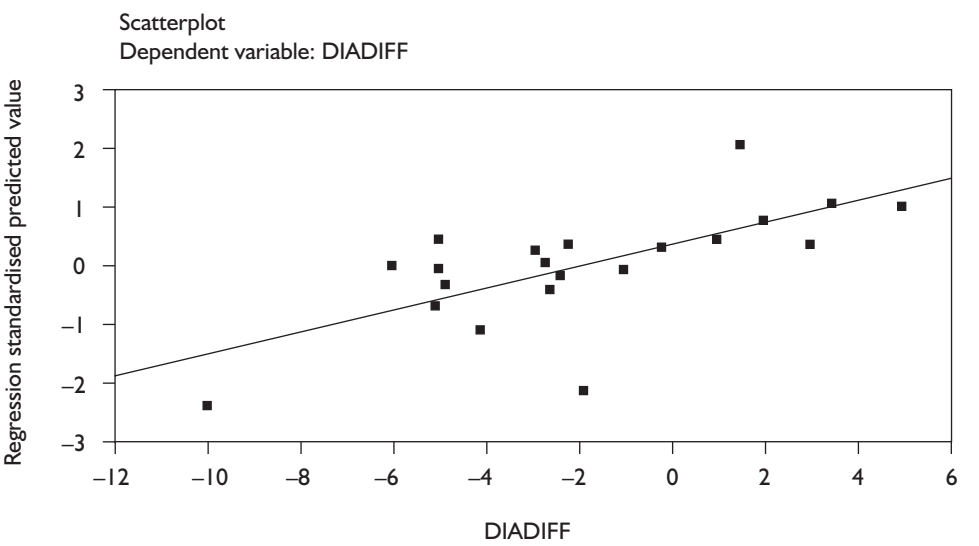
[a] Dependent variable: DIADIFF.

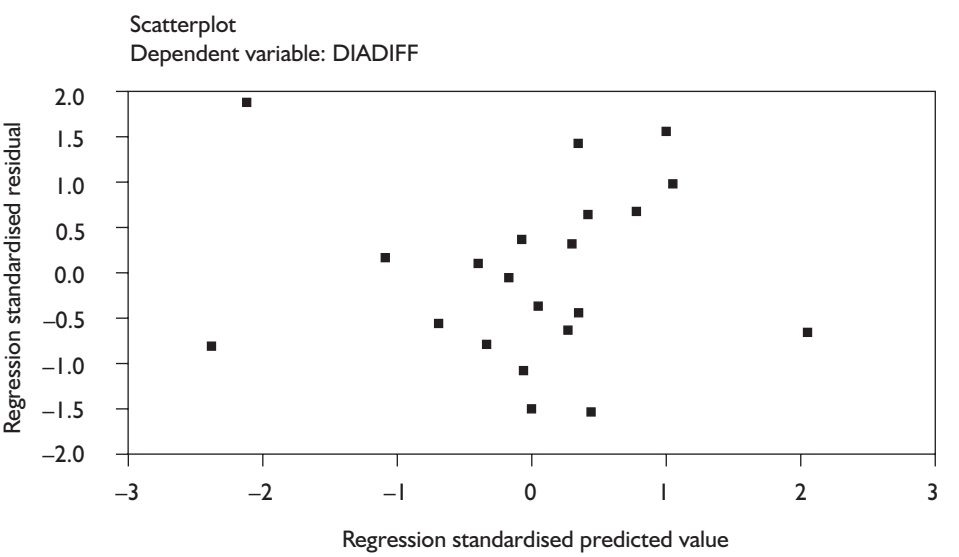
Residuals statistics[a]

	Min.	Max.	Mean	SD	n
Predicted value	–7.7900	3.2080	–1.9048	2.47122	21
Residual	–4.3389	5.2431	0.0000	2.69772	21
Std predicted value	–2.382	2.069	0.000	1.000	21
Std residual	–1.568	1.894	0.000	0.975	21

[a] Dependent variable: DIADIFF.







(ii) DBP difference versus weight difference (excluding > 40 kg losses)

Diff in DBP = 0.360 (wt diff), i.e. –10 kg → 3.60 mmHg actual drop in DBP

Model summary[a,b]

Model	R	R^2 [c]	Adjusted R^2	SE of the estimate
1	0.757[d]	0.573	0.552	2.70976

[a] Dependent variable: DIADIFF.
[b] Linear regression through the origin.
[c] For regression through the origin (the no-intercept model), R^2 measures the proportion of the variability in the dependent variable about the origin explained by regression. This cannot be compared to R^2 for models that include an intercept.
[d] Predictors: MISWTD.

ANOVA[a,b]

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	197.027	1	197.027	26.833	0.000[c]
Residual	146.856	20	7.343		
Total	343.883[d]	21			

[a] Dependent variable: DIADIFF.
[b] Linear regression through the origin.
[c] Predictors: MISWTD.
[d] This total sum of squares is not corrected for the constant because the constant is zero for regression through the origin.

Coefficients[a,b]

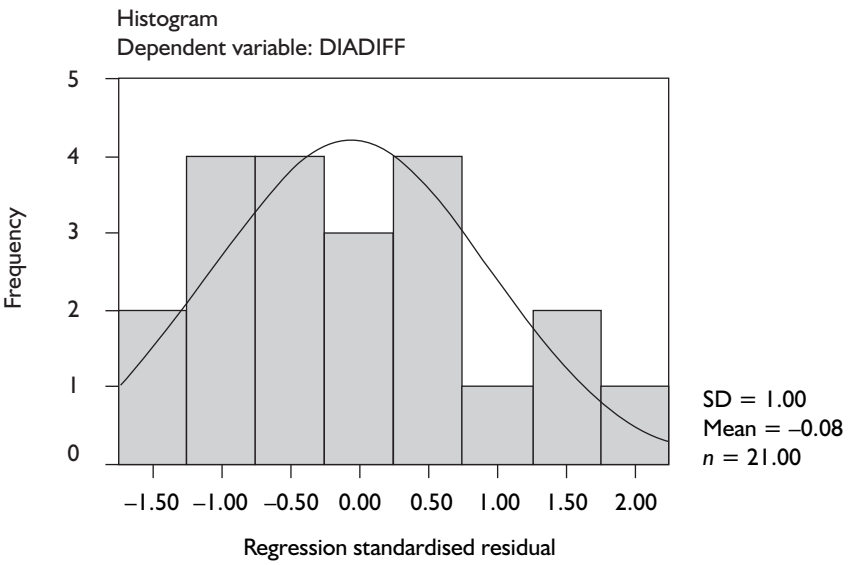
	Unstandardised coefficients		Standardised coefficients		
Model	B	SE	β	t	Sig.
1 MISWTD	0.360	0.069	0.757	5.180	0.000

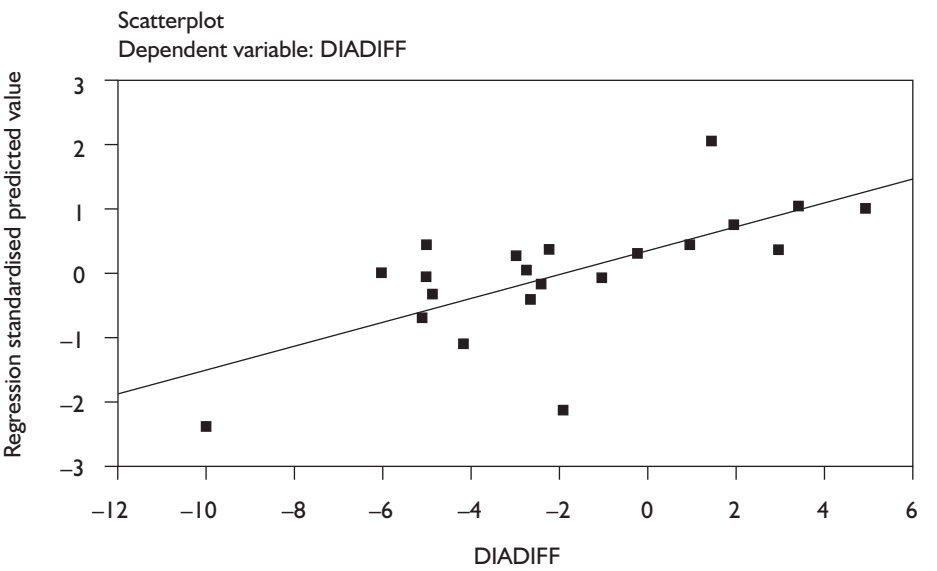
[a] Dependent variable: DIADIFF.
[b] Linear regression through the origin.

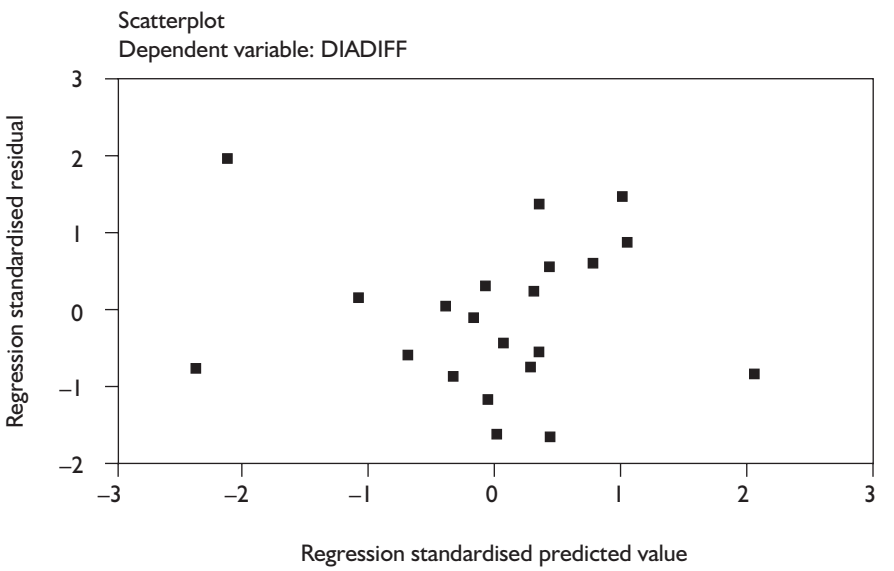
Residuals statistics[a,b]

	Min.	Max.	Mean	SD	n
Predicted value	–7.9195	3.7077	–1.6975	2.61259	21
Residual	–4.5601	5.3355	–0.2072	2.70143	21
Std predicted value	–2.382	2.069	0.000	1.000	21
Std residual	–1.683	1.969	–0.076	0.997	21

[a] Dependent variable: DIADIFF.
[b] Linear regression through the origin.





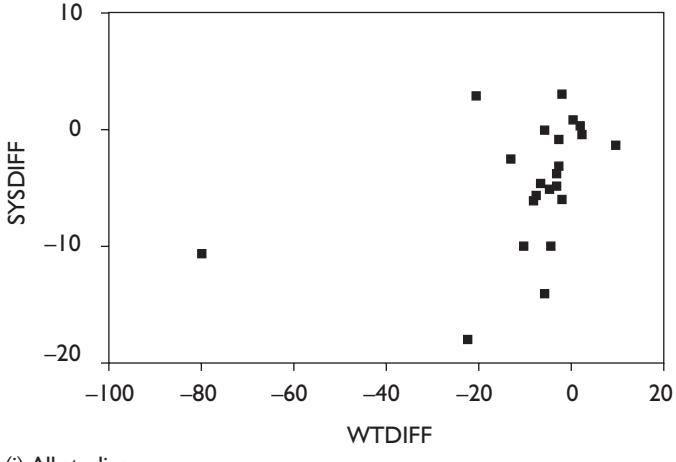


Appendix 23c

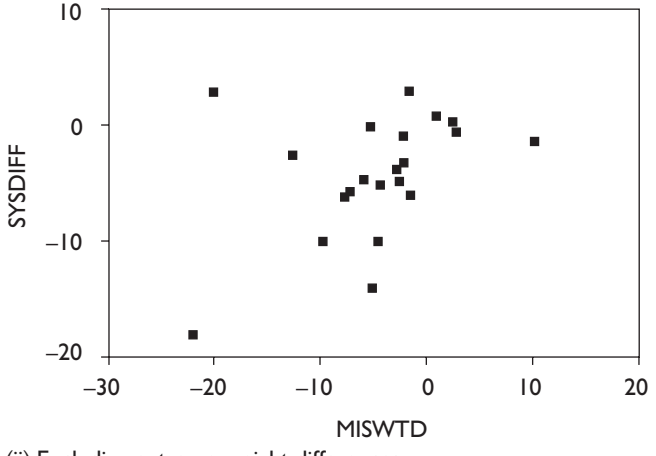
Weight differences compared with systolic blood pressure differences

(i) Scatterplots

(a) SBP versus weight differences

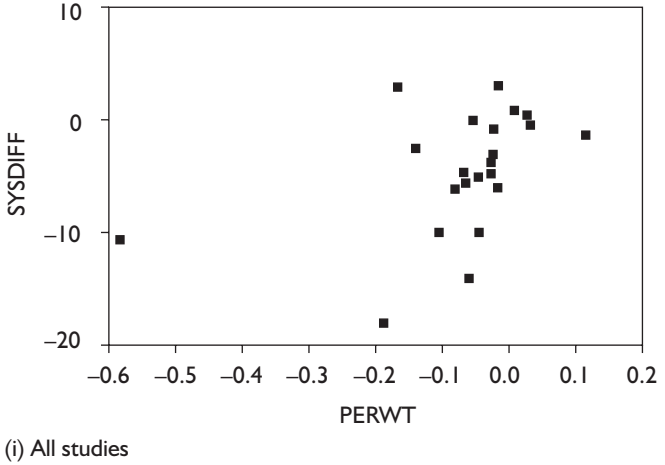


(i) All studies

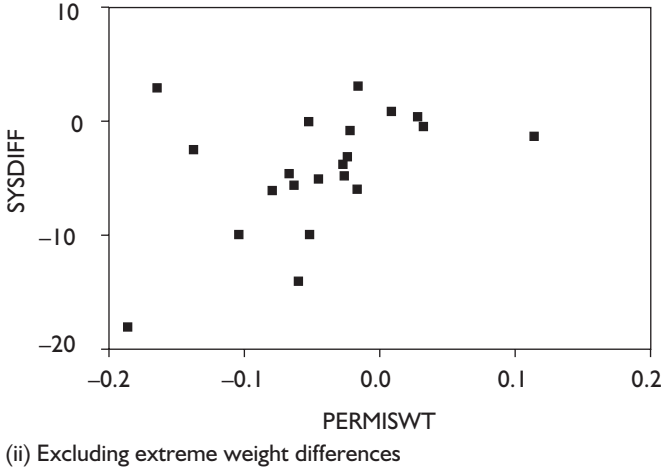


(ii) Excluding extreme weight differences

(b) SBP versus % weight differences



(i) All studies



(ii) Excluding extreme weight differences

(ii) Pearson correlations for SBP difference (raw and percentage) with weight difference variables

SBP difference	Follow-up (months)	All subgroups			Extreme initial weight and weight losses excluded		
		Initial weight (kg)	Weight diff (kg)	% weight diff	Initial weight (kg)	Weight diff (kg)	% weight diff
Correlation *r*	0.041	–0.155	0.393	0.428*	0.005	0.407	0.432
p-Value (2-tailed)	0.857	0.492	0.070	0.047	0.983	0.067	0.051
n	22	22	22	22	21	21	21

* Correlation is significant at the 0.05 level (2-tailed).

% SBP difference	Follow-up (months)	All subgroups			Extreme initial weight and weight losses excluded		
		Initial weight (kg)	Weight diff (kg)	% weight diff	Initial weight (kg)	Weight diff (kg)	% weight diff
Correlation *r*	0.015	0.180	0.491	0.502	0.080	0.498	0.509
p-Value (2-tailed)	0.960	0.538	0.075	0.067	0.538	0.070	0.063
n[a]	14	14	14	14	14	14	14

[a] Some studies had no baseline blood pressures given, so % SBP could not be calculated; hence, the number of subgroups is reduced to $n = 14$.

(iii) Regression: SBP with percentage weight difference variables (excluding > 40 kg losses)

diff in SBP = –2.719 + 33.745 (%wt diff), i.e. 10% wt loss → 6.1 mmHg drop in SBP

SPSS variable names: PERMISWT, average % weight difference excluding extreme subgroups; SYSDIFF, average SBP difference

Model summary[a]

Model	R	R^2	Adjusted R^2	SE of the estimate
1	0.432[b]	0.186	0.144	4.9395

[a] Dependent variable: SYSDIFF.
[b] Predictors: (Constant), PERMISWT.

ANOVA[a]

Model	Sum of squares	df	Mean square	F	Sig.
1 Regression	106.182	1	106.182	4.352	0.051[b]
Residual	463.568	19	24.398		
Total	569.749	20			

[a] Dependent variable: SYSDIFF.
[b] Predictors: (Constant), PERMISWT.

Coefficients[a]

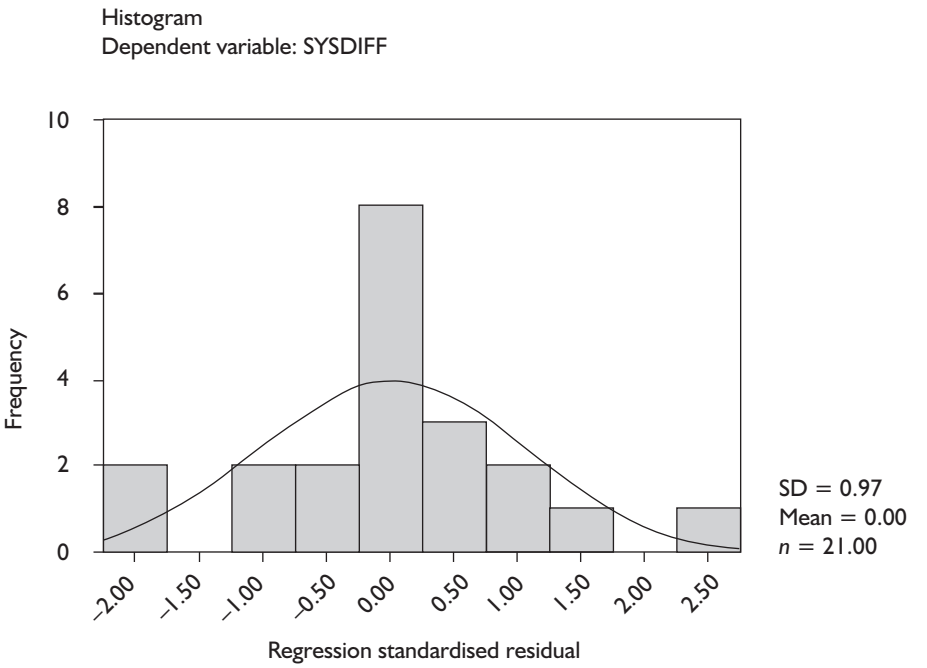
	Unstandardised coefficients		Standardised coefficients		
Model	B	SE	β	t	Sig.
1 (Constant)	–2.719	1.298		–2.096	0.050
PERMISWT	33.745	16.176	0.432	2.086	0.051

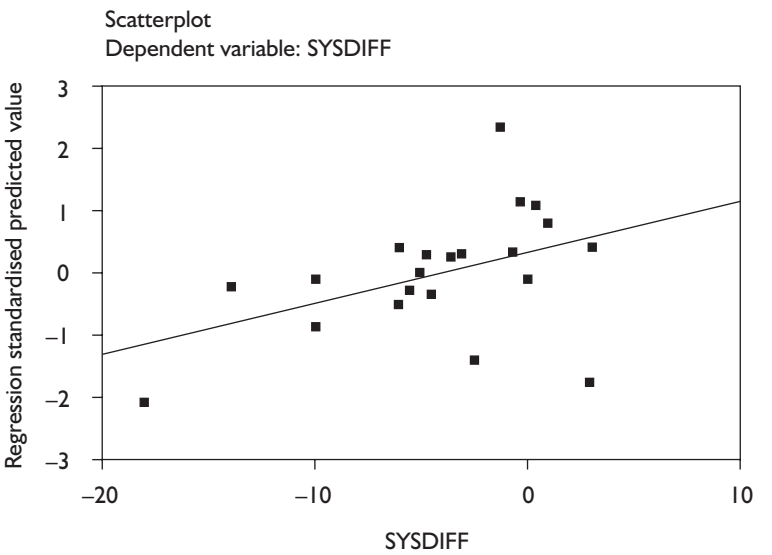
[a] Dependent variable: SYSDIFF.

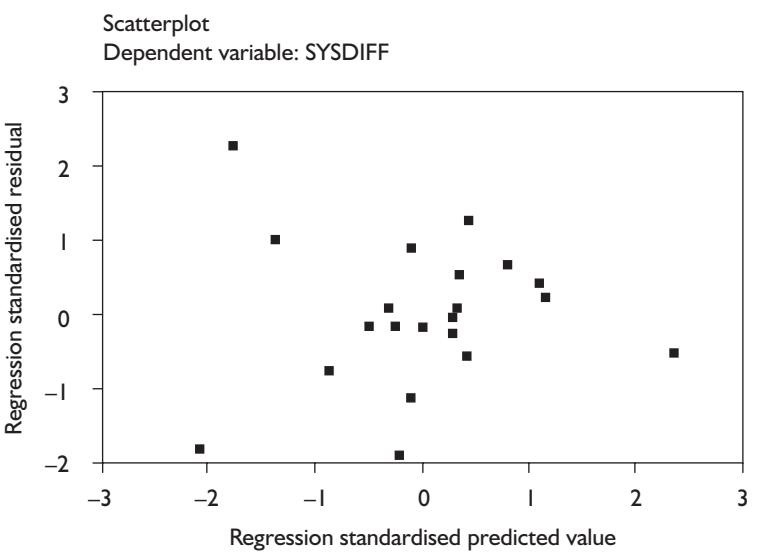
Residuals statistics[a]

	Min.	Max.	Mean	SD	n
Predicted value	–9.0107	1.2125	–4.2262	2.3042	21
Residual	–9.2819	11.1972	0.000	4.8144	21
Std predicted value	–2.076	2.360	0.000	1.000	21
Std residual	–1.879	2.267	0.000	0.975	21

[a] Dependent variable: SYSDIFF.







Appendix 23d

Other results relating to hypertension: all surgical

Study	Participant type	Follow-up years	Hypertension (HT)	Other
Pories, 1992[266]	Morbid obese	11 years overall	Baseline: *n* = 515, 301 (58.4%) had HT Follow-up: unclear when results redone 96/301 remained hypertensive	
O'Leary, 1980[272]	Obese	7 years overall	Baseline: *n* = 274, 46% were HT Follow-up: unclear when results redone 33% of those with HT at baseline improved, 66% of those with HT at baseline remained hypertensive	
Sjostrom C, 2000[278]	SOS hypertensive and obese	8 years		Baseline: *n* = 257, control *n* = 132, surgical *n* = 125 Follow-up: control *n* = 34, surgical *n* = 33; HT OR = 1.05 (0.58 to 1.89); adjusted for: gender, age, initial weight, weight, smoking status, alcohol, energy in, physical activity
Carson, 1994[263]	Hypertensive > 90 mmHg and obese	4 years	Baseline *n* = 45, had HT and 41 had medication Follow-up: HT results *n* = 18?; 12/18 resolved, 2/18 improved, 4/18 no change, 5 still on medication	Follow-up: resolved HT group BMI = 32, improved HT group BMI = 37.4, no change HT group BMI = 49.5
Foley, 1992[288]	Obese	4.2 (SE 0.2) years	Baseline *n* = 74, all HT Follow-up: *n* = 67; 44/67 (66%) resolved HT; 23/67 (34%) persistent HT	

Appendix 24

Changes in weight and psychological measures after a cycle of weight loss and regain

TABLE 35

		Baseline		6 months		Follow-up			
Variable	**n**	**Mean**	**(SD)**	**Mean**	**(SD)**	**Mean**	**(SD)**	***F***	***p***
Weight (kg)	48	105.8	(16.6)	84.7	(13.2)	109.4	(20.0)	5.24	0.03
Depression	48	12.7	(8.5)	6.0	(8.9)	9.3	(8.1)	8.43	0.006
Binge eating	46	20.7	(7.8)	14.9	(7.1)	14.6	(8.2)	24.02	0.0001
Restraint	47	8.2	(3.4)	15.1	(3.4)	8.4	(4.2)	0.0001	0.99
Disinhibition	47	11.7	(2.5)	9.6	(3.1)	10.0	(3.2)	17.89	0.001
Hunger	47	7.9	(3.5)	6.2	(3.4)	5.9	(3.1)	17.31	0.001

Data from Foster *et al*. (1996)[163] Table 1.
F = ANOVA, repeated measures within-subject design. Six-month data included only to assess magnitude of changes during treatment. *F* and *p* values are for baseline and follow-up comparisons. Depression was assessed by the Beck Depression Inventory; binge eating by the Binge Eating Scale; and restraint, disinhibition and hunger by the Eating Inventory.

TABLE 36 *NVM scores of the study population before and after surgery compared with the reference group (standard values of a general Dutch population)*

	Reference		Before surgery		After surgery	
	Mean	**(95% CI)**	**Mean**	**(95% CI)**	**Mean**	**(95% CI)**
Negativism	14.7	(14.2 to 15.2)	18.1	(15.9 to 20.3)**	16.7	(14.5 to 18.9)
Somatisation	5.3	(4.9 to 5.7)	12.8	(10.7 to 14.9)***	14.6	(12.1 to 17.1)***
Shyness	8.0	(7.6 to 8.4)	14.5	(12.1 to 16.9)***	9.9	(7.8 to 12.0)
Psychopathology	2.7	(2.5 to 2.9)	3.3	(2.5 to 4.1)	3.2	(2.5 to 3.9)
Extroversion	17.1	(16.7 to 17.5)	15.1	(13.5 to 16.7)*	16.8	(15.3 to 18.3)

Data from van Gemert *et al*. (1998)[270] Table 1.
Separate variance *t*-test for differences between the values of the study groups (before and after surgery) and the values of the reference group (*$p < 0.02$, **$p < 0.001$, ***$p < 0.001$).

TABLE 37 *NPV scores of the study population before and after surgery compared with the reference group (standard values of a general Dutch population)*

	Reference		Before surgery		After surgery	
	Mean	**(95% CI)**	**Mean**	**(95% CI)**	**Mean**	**(95% CI)**
Inadequacy	13.9	(13.6 to 14.2)	16.8	(14.0 to 19.6)*	13.9	(11.4 to 16.4)
Social inadequacy	12.3	(12.0 to 12.6)	15.8	(13.4 to 18.2)**	9.3	(7.1 to 11.5)**
Rigidity	30.6	(30.2 to 31.0)	27.3	(25.2 to 29.4)**	27.8	(25.8 to 29.8)**
Grievance	18.2	(18.0 to 18.4)	21.2	(19.1 to 23.3)**	19.4	(17.3 to 21.5)
Self-satisfaction	13.9	(13.7 to 14.1)	12.5	(10.8 to 14.2)	13.0	(11.6 to 14.4)
Dominance	11.9	(11.7 to 12.1)	13.6	(11.5 to 15.7)	15.6	(13.7 to 17.5)***
Self-esteem	28.0	(27.9 to 28.1)	24.4	(22.2 to 26.6)**	26.5	(24.5 to 28.5)

Data from van Gemert *et al*. (1998)[270] Table 2.
Separate variance *t*-test for differences between the values of the study groups (before and after surgery) and the values of the reference group (*$p < 0.02$; **$p < 0.001$; ***$p < 0.001$).

TABLE 38 *Comparison of the SIG scores before and after surgery*

	Before surgery				After Surgery			
	Frequency of Expressing		**Tension felt**		**Frequency of Expressing**		**Tension felt**	
	Mean	**(SD)**	**Mean**	**(SD)**	**Mean**	**(SD)**	**Mean**	**(SD)**
Positive feelings	2.7	(0.7)	2.4	(0.9)	3.1	(0.8)**	2.0	(0.9)*
Negative feelings	2.7	(0.5)	2.5	(0.8)	3.0	(0.6)*	2.2	(0.8)
Self-expression	2.7	(0.7)	2.6	(1.0)	3.1	(0.7)*	2.0	(0.9)**
Insecurity	3.4	(0.4)	2.1	(0.7)	3.5	(0.7)	1.8	(0.6)*
Total	3.0	(0.5)	2.3	(0.8)	3.2	(0.6)*	2.0	(0.7)*

Data from van Gemert *et al*. (1998)[270] Table 3.
Paired Student's *t*-test (*$p < 0.05$; **$p < 0.001$).

Appendix 25

Sleep apnoea results

Study	Description	Initial *n*	Mean age (years)	Initial weight (kg)	Follow-up (years)	Follow-up *n*	Weight change (kg)	Initial AHI events/hour	Difference in AHI events/hour
Peppard, 2000[290]	Men and women with obesity and sleep disordered breathing	268	46.6 (SD 7.4)	101.2 (SD 15.5)	4	268	+2.4 (SD 7.4)	7.4 (SD 13.1)	+2.0 (SD 12.3)
			Subgroup that lost –20% to –10% Model adjusted for age and gender			19	–20% to –10% at –20%		–3.6 (SD 15.3) –32% (95% CI –58 to 11%)
			Subgroup that lost –10% to –5% Model adjusted for age and gender			17	–10% to –20% at –10%		–2.4 (SD 6.1) –17% (95% CI –34 to 5%)
			Stable group: lost –5% to 5% Model adjusted for age and gender			129	–5% to 5% at –5% at +5%		+1.0 (SD 10.2) –9% (95% CI –18 to 2%) +9% (95% CI –2 to 21%)
Charuzi, 1992[264]	Surgical obesity and SAS	51	41.2 (SD 9.5)	138.9 (SD 24.6)	6 (SD 1.79)	42	–37.38 (estimated SD 17.76, see Appendix 26)	60.8 (SD 35.5)	*n* = 6 for full AI at 6 year. Results imply that if weight loss is maintained then AI is small (i.e. like the 1-year results)
Sugerman, 1992[291]	Surgical morbid obesity SAS and morbid SAS with hypoventilation	110		166 (SD 35)	4.5 (SD 2.3)	57	–54 kg (SD 32)	64 (SD 39) (67% severe)	32 (SD 32) 38/57 asymptomatic, 15/57 mild SAS, 4/57 still SAS and obesity hypoventilation syndrome

AI, apnoea index; SAS, sleep apnoea syndrome.

Appendix 26

Methods of estimating measures of spread

Appendices 13 and 14 provide a method of estimating standard deviations from their associated weight and health outcome differences as appropriate for RCTs. For the epidemiological review these relationships were re-examined given that some of the weight and health outcome differences were larger (as for surgical interventions) and would thus otherwise require extrapolation. This part of the review also looked at the outcomes in the longer term, which may itself alter the relationship. The models given in Appendices 13 and 14 are used as a basis.

Part A: Estimation of weight difference measure of spread

As the weight differences were gathered initially the standard deviations did not appear to have a linear relationship with their absolute weight differences, causing concern about applying a linear equation as in Appendix 13. The standard errors did at first appear to have a linear relationship with the absolute weight differences. However, as the database became complete and the spread of the differences widened, so did the relationships.

All available studies that gave weight differences and an appropriate measure of spread for these differences were amalgamated. The relationship between absolute weight differences and their associated standard deviations ($r = 0.853$) and standard errors ($r = 0.894$) were examined and found to be reasonably linear.

Although there is a slightly stronger linear relationship between the absolute weight losses and their associated standard errors, both regression models were investigated.

The assumptions of such a model require that the relationship is linear, that the observations are independent and that the residuals are normally distributed. Although the standard error model appears to have a better fit, the normality and independence assumptions were in some doubt. When examined, the residuals from the standard deviation model appear for this limited data set to uphold all of the assumptions.

Reassuringly, this fits in with the conclusion from Appendix 13. However, there are no right or wrong ways of making such estimates. The epidemiology review results, when required, used the estimates based on the model given here:

Weight diff. SD = 5.837 + 0.319 × (Absolute weight diff.)

This model has the assurance that it is similar to the RCT-based model but has been developed using the full breadth of weight differences seen in the epidemiology review.

n	Adjusted R^2	Dependent	Prediction equation
25	0.729	Weight difference SD =	5.837 + 0.319 × (Absolute weight difference)
25	0.790	Weight difference SE =	0.710 + 0.07039 × (Absolute weight difference)

Part B: Estimation of cholesterol difference standard deviation

The studies that gave cholesterol differences along with appropriate measure of spread were considered together. The relationship between cholesterol differences and their standard deviations was varied and certainly not linear. Appendix 14 estimates this as a constant of 1.08 mmol/l that will be adopted within the epidemiology review, given that none of the observed measures was larger than this and would hence be a conservative estimate.

Part C: Estimation of LDL difference standard deviation

As for cholesterol, the relationship between LDL differences and their standard deviations was non-linear and probably constant. The epidemiology data collected for LDL difference standard deviations never exceeded 0.74 mmol/l, the value suggested in Appendix 14.

Part D: Estimation of HDL difference standard deviation

Four studies gave an HDL difference with its standard deviation. Their average was 0.245 mmol/l similar to the 0.29 mmol/l estimate given by Appendix 14. With no other evidence to suggest otherwise, 0.29 mmol/l was used to estimate HDL difference standard deviations.

Part E: Estimation of TGs difference standard deviation

Four data points were available to estimate the triglycerides difference measure of spread, hence linear model was not significant. However, the constant term in Appendix 14 of 0.96 mmol/l seemed small. Instead, the average of the values in the epidemiology review (1.53 mmol/l) was used.

Part F: Estimation of glucose difference standard deviation

Although the epidemiology review gave results of fasting glucose plasma levels there were no differences with associated measure of spread. All the estimated differences were less than 7 mmol/l, thus the constant given in Appendix 14 of 1.35 mmol/l was used to estimate the standard deviations.

Part G: Estimation of DBP and SBP difference standard deviations

Intially the epiemiology review produced very few results for DBP and SBP differences with associated measures of spread. Those available compared favourably with those estimated from the RCTs given in Appendix 14. Consequently, all the estimated standard deviations of the differences for DBP and SBP were set to the constants 8.3 mmHg and 12.7 mmHg, respectively, as given in Appendix 14. Although, more studies later became available, due to time constraints it was not possible to fully explore the relationship between the mean differences and their standard deviations in order to revise this decision.

Appendix 27

Quality assessment

Appendix 27a

Quality assessment scores

TABLE 39 *Results of each quality assessment question (see Appendix 17) for each study, arranged alphabetically*

Study	Aim	Sample	Age	Measure	Valid	Risk	Intervention	Setting	Mode	Untoward	Adequate follow-up	Long follow-up	Losses	Data	Numbers	Time	Sign	Main	Null	Overlook	Total
Carson, 1994[263]	2	0	2	2	2	2	2	2	2	0	0	1	0	2	2	2	2	2	2	2	31
Charuzi, 1992[264]	2	2	2	2	2	0	2	2	2	2	2	2	0	2	0	0	2	2	2	2	32
Chaturvedi, 1995[267]	1	0	2	2	2	1	2	2	2	2	1	2	0	2	2	1	2	1	1	0	28
Davidson, 1999[41]	2	0	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	36
Ewbank, 1995[284]	2	0	2	2	2	0	2	2	2	0	2	2	2	2	2	0	2	2	0	2	30
Foley, 1992[288]	2	0	2	2	2	0	2	2	2	0	2	1	0	2	2	1	2	2	0	1	27
Ford, 1997[268]	2	0	2	2	2	2	2	2	2	0	1	2	2	2	2	2	2	2	2	2	35
Foster, 1996[163]	2	0	2	2	2	0	2	2	2	2	0	2	2	2	1	2	2	2	2	2	33
Gleeysten, 1992[286]	0	0	0	2	2	0	2	2	2	0	2	2	0	2	2	2	2	2	0	2	26
Hauptman, 2000[45]	2	1	2	2	2	2	2	2	2	1	0	2	2	2	2	2	2	2	2	2	36
Hess, 1998[271]	1	0	2	2	2	2	2	2	2	1	0	2	0	2	1	2	0	2	0	1	26
Holt, 1987[265]	1	0	2	2	1	2	2	2	2	1	2	1	0	2	1	0	0	2	2	2	27
Karason, 1999[277]	2	0	2	2	2	2	2	1	2	0	2	1	0	2	2	1	2	2	2	2	31
Kauffman, 1992[283]	1	0	2	0	2	1	2	2	2	0	2	2	1	1	0	0	2	2	0	2	24
Kunesova, 1998[262]	2	0	2	2	2	2	2	2	2	0	1	1	0	0	1	1	2	1	0	2	25
Long, 1994[279]	2	0	2	2	2	2	2	2	2	0	0	2	0	1	2	0	2	2	1	2	28
Moore, 2000[269]	2	0	2	2	2	2	0	2	2	0	2	2	2	1	1	0	1	2	2	2	29
O'Leary, 1980[272]	0	0	0	2	1	2	2	2	2	1	1	1	0	1	1	0	0	1	2	2	21
Peppard, 2000[290]	2	2	2	2	2	2	0	2	2	2	2	2	0	2	1	2	2	2	0	2	33
Pories, 1992[266]	2	0	2	2	2	2	2	2	1	1	0	2	0	1	1	0	0	2	2	2	26
Rossner, 1980[287]	2	1	2	2	2	2	2	2	2	0	2	1	0	2	2	2	2	2	0	2	32
Rossner, 2000[37]	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	37
Rumpel, 1993[276]	2	0	1	1	1	2	0	2	2	2	1	2	0	2	2	0	0	2	2	2	26
Sjostrom CD, 2000[278]	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	2	38
Sjostrom M, 1999[285]	2	0	2	2	2	2	2	2	2	0	1	2	0	2	2	2	2	2	1	2	32
Sugerman, 1992[291]	1	0	0	2	2	2	2	2	2	1	1	2	0	2	2	2	2	2	2	2	31
Teupe, 1991[84]	2	1	2	2	2	2	2	2	2	0	1	2	2	2	2	2	2	2	1	2	35
Tuomilehto, 2001[168]	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	2	38
van Gemert, 1998[270]	2	2	2	2	2	0	2	1	2	0	2	1	2	2	2	0	2	2	2	2	32
Wannamethee, 1999[280]	2	0	2	2	1	2	2	2	2	2	2	2	0	2	2	2	2	2	0	2	33
Watts, 1990[281]	1	0	2	2	2	2	2	2	2	2	1	2	0	2	2	2	2	2	2	2	34
Williamson D, 1995[274]	1	0	2	2	2	2	2	2	2	0	2	2	2	2	2	0	1	2	2	2	32
Williamson D, 1999[273]	2	0	2	2	2	2	2	2	2	0	2	2	0	2	2	2	1	2	2	2	33
Williamson D, 2000[275]	2	0	2	2	2	2	2	2	2	0	2	2	1	2	2	2	1	2	2	2	34
Wing, 1995[282]	2	0	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	1	2	35
Wing, 1998[176]	2	0	2	2	2	2	2	2	2	2	2	2	0	2	2	2	2	2	1	2	35
Wittgrove, 2000[289]	2	2	0	2	2	1	2	1	2	2	1	1	1	2	2	1	0	2	1	1	28

Appendix 27b

Quality assessment summaries

TABLE 40 *Quality assessment scores and percentage scores for each study (arranged from highest to lowest)*

Study	Type of study	Total score	% Score
Tuomilehto, 2001[168]	RCT, non-surgical	38	0.95
Sjostrom CD, 2000[278]	Non-RCT, surgical	38	0.95
Rossner, 2000[37]	RCT, drug	37	0.93
Hauptman, 2000[45]	RCT, drug	36	0.90
Davidson, 1999[41]	RCT, drug	36	0.90
Wing, 1998[176]	Non-RCT, non-surgical	35	0.88
Wing, 1995[282]	RCT, diet and exercise (Weight Cycling)	35	0.88
Teupe, 1991[84]	RCT, diet and drug	35	0.88
Ford, 1997[268]	Prospective	35	0.88
Williamson, 2000[275]	Prospective	34	0.85
Watts, 1990[281]	Prospective, non-surgical	34	0.85
Williamson, 1999[273]	Prospective	33	0.83
Wannamethee, 1999[280]	Prospective	33	0.83
Peppard, 2000[290]	Prospective	33	0.83
Foster, 1996[163]	Prospective, combined intervention	33	0.83
Williamson, 1995[274]	Prospective	32	0.80
Sjostrom M, 1999[285]	Prospective, non-surgical	32	0.80
Rossner, 1980[287]	Prospective, surgical	32	0.80
van Gemert, 1998[270]	Prospective, surgical	32	0.80
Charuzi, 1992[264]	Prospective, surgical	32	0.80
Sugerman, 1992[291]	Prospective, surgical	31	0.78
Karason, 1999[277]	Non-RCT	31	0.78
Carson, 1994[263]	Prospective, surgical	31	0.78
Ewbank, 1995[284]	Prospective, non-surgical	30	0.75
Moore, 2000[269]	Prospective	29	0.73
Wittgrove, 2000[289]	Prospective, surgical	28	0.70
Long, 1994[279]	Non-RCT, surgical	28	0.70
Chaturvedi, 1995[267]	Prospective	28	0.70
Holt, 1987[265]	Prospective, surgical	27	0.68
Foley, 1992[288]	Prospective, surgical	27	0.68
Rumpel, 1993[276]	Prospective	26	0.65
Pories, 1992[266]	Prospective, surgical	26	0.65
Hess, 1998[271]	Prospective, surgical	26	0.65
Gleeysten, 1992[286]	Prospective, surgical	26	0.65
Kunesova, 1998[262]	Prospective, combined intervention	25	0.63
Kauffman, 1992[283]	Prospective, non-surgical	24	0.60
O'Leary, 1980[272]	Prospective, surgical	21	0.53

TABLE 41 *Quality assessment results for each quality assessment question*

	No	Possibly/unclear	Yes
	Count	Count	Count
Aims clearly stated	2	7	28
Sample size justified	27	4	6
Age of people defined	4	1	32
Measurements clearly stated	1	1	35
Measurements valid and reliable		4	33
Risk factors recorded	6	3	28
Intervention defined initially	3		34
Setting of study clear		3	34
Mode of assessment described		1	36
Untoward events happen	20	8	9
Follow-up adequate	6	12	19
Follow-up long enough		9	28
Losses to follow-up described	21	3	13
Basic data described	1	5	31
Do the numbers add up	2	8	27
Did analysis allow for time	11	5	21
Statistical significance assessed	6	4	27
Main findings assessed ok		3	34
Null/negative findings interpreted	9	7	21
Any important effects missed	1	3	33

Appendix 28

Definition of weight cycling

The study by Wing and colleagues,[282] gave the following definitions for the different weight cycling groups:

- **gainers**: those who gained 4.5 kg from baseline to 30 months
- **stable**: those who remained within ± 4.5 kg of their baseline weight throughout the study period
- **large cyclers**: those who lost 9 kg or more during the treatment period but who returned to within ± 4.5 kg of their baseline weight at the end of the study
- **small cyclers**: those who lost between 4.5 and 9 kg during the treatment period but who returned to within ± 4.5 kg of their baseline weight at the end of the study
- **partial cyclers**: those who lost 9 kg or more during the treatment period and kept off 4.5–9 kg at the end of the follow-up period
- **small successes**: those who lost 4.5–9 kg during treatment and kept off 4.5–9 kg by the end of the study
- **large successes**: those who lost more than 9 kg during treatment and kept off more than 9 kg by the end of the study.

Appendix 29

Search strategies for the systematic review of economic evaluations

MEDLINE (1966–2002, week 4) (Ovid)

1. "costs and cost analysis"/
2. cost benefit analysis/
3. economic evaluation.tw.
4. economic analys#s.tw.
5. cost effective$.ti.
6. cost utility.ti.
7. or/1-6

EMBASE (1980–2002, week 9) (Ovid)

1. economic evaluation/
2. cost benefit analysis/
3. cost effectiveness analysis/
4. cost minimization analysis/
5. cost utility analysis/
6. or/1-5

CINAHL (1982–December 2001) (Ovid)

1. "costs and cost analysis"/
2. cost benefit analysis/
3. economic evaluation.tw.
4. economic analys#s.tw.
5. cost effective$.ti.
6. cost utility.ti.
7. or/1-6

PsycINFO (1967–December 2001) (Silverplatter)

1. 'Costs-and-Cost-Analysis' in DE
2. economic evaluation
3. economic analys?s
4. cost utility analysis
5. cost effectiveness analysis
6. cost benefit analysis
7. cost* near3 benefit*
8. cost* near outcome*
9. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8

Science and Social Science Citation Indexes (1981–2002) (Web of Science)

(obes* or weight control or weight loss or weight reduction or overweight or diet therapy) and (economic evaluation or economic analys?s or cost benefit* or cost effectiveness or cost utility)

ASSIA (1987–February 2002) and HMIC (to January 2002) (Silverplatter)

1. economic evaluation
2. economic analys?s
3. cost* near benefit*
4. cost* near outcome*
5. cost near1 effectiveness
6. cost near1 utility
7. #1 or #2 or #3 or #4 or #5 or #6

Appendix 30

Data extraction table for economic evaluations: orlistat

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Foxcroft and Ludders, 1999[308] and Foxcroft and Milne, 2000[309]. See O'Meara *et al*., 2001[25] for all other information						
Lamotte *et al*., 2002[313] **Intervention**: orlistat in type 2 diabetic patients **Economic evaluation type**: cost–utility analysis **Country and currency**: Belgium, 2000 euros	**Intervention**: 2-year treatment with orlistat with diet vs placebo with diet in 4 types of obese diabetic patients: no other conditions, hypercholesterolaemia, AHT, both conditions **Outcomes**: main outcome was life-years gained. Three clinical factors were assessed to determine changes in morbidity and mortality: reduction in HbA_{1c}, LDL cholesterol and DBP (no significant reduction found)	**Efficacy data**: Hollander *et al*., 1998[33]; Clark, 1998[333]; Koskinen *et al*., 1992[334]; UKPDS 24, 1998[88] **Mortality and morbidity**: UKPDS 38, 1998[334]	10-year Markov model with 6-month periods (20 periods total). Model assumed no complications at time of entry and that weight lost was fully regained by year 7 Costs were discounted by 3% per year. Effects were not discounted except as a sensitivity analysis Assumed (based on Hollander)[33,34] that 4.2% could stop oral antidiabetics and an additional 10.1% reduced medication by 24.8% Perspective was that of the healthcare consumer	**Costs (in year 2000 euros)**: orlistat: €881/year, metformin: €119/year 1998 euro healthcare costs by patient group: €1726 if no other conditions, €2578 if hypercholesterolaemia, €3844 if AHT, €5443 if both **Effects (life-years gained) by patient group**: 0.08 if no other conditions, 0.204 if hypercholesterolaemia, 0.227 if AHT, 0.474 if both **ICER (euros per life-year gained) by patient group**: €19,986 if no other conditions, €7,407 if hypercholesterolaemia, €7,388 if AHT, €3,462 if both	Discounting effects by 3% increased the ICER to €23,522 for the no other conditions group and to €4062 for patients with both other conditions Reducing the catch-up period to regain weight to 2.5 years increased the ICER to €26,527 for the no complications group and to €4565 for patients with both complications Effects of variation in the effect of orlistat on HbA_{1c} are provided Effects of 50% reduction in effect of orlistat on LDL cholesterol are provided	The authors note that they are not able to predict the independent effect of weight loss on the incidence of complications and death. Instead, they use the effect of weight loss on risk factors and then estimate the effect of risk factors on morbidity and mortality, i.e. assuming that improving risk factors reduces the number of complications While the model does assume that all weight is regained in 7 years, the model seems to assume that the benefits from the initial weight loss accrue for a full 7 years. In other words, the beneficial effect of orlistat on the risk factors appears to persist for 7 years in the model

Appendix 31

Data extraction table for economic evaluations: sibutramine

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
BASF Pharma/Knoll 2000, company submission. See O'Meara *et al*. 2002[26] for all other information						

Appendix 32

Data extraction table for economic evaluations: metformin

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Clarke *et al.*, 2001[87] **Intervention**: metformin in type 2 diabetic participants > 120% of IBW or approx. 25.6 kg/m^2 BMI **Economic evaluation type**: cost-effectiveness analysis **Country and currency**: UK, 1997 £	**Intervention**: 342 overweight participants were treated with an intensive blood glucose control policy with metformin, while 411 overweight patients were treated primarily with diet alone **Outcomes**: years of life gained (due to lack of reliable estimates of utility associated with different diabetes-related states)	**Efficacy data**: UKPDS **Cost data**: primary data collection of metformin dose, all other drugs used for treating diabetes or other conditions, and hospital admissions. Cross-sectional survey was used for non-inpatient healthcare resource use (home care and clinic visits or telephone calls to all providers) which was costed using national unit cost estimates	Simulation model used to estimate gains in life expectancy. Median follow-up 10.7 years. Identical hazard rates assumed beyond the trial period. Bootstrapping used to incorporate uncertainty Tobit and Poisson estimation models used to predict resource use for sensitivity analysis due to 17% non-users Estimates used non-discounted component costs as well as costs discounted at 3 and 6%. Outcomes were also discounted at 3 and 6% **Study perspective**: healthcare purchaser, so focus was on direct costs only	**Costs**: there was an estimated reduction in discounted total treatment costs since the reduced cost of complications more than offset the increased drug treatments costs. With costs discounted at 6%, the estimated cost saving was £258, but was not statistically significant (95% CI –£1171 to £655) **Outcomes**: the estimated increase in life-years from metformin was 1.0 years (0.0 to 2.1 years). Discounted at 3%, this became 0.6 years (0.0 to 1.2 years) **ICER**: metformin is cost saving at mean differences in costs and effects	Exclusion of 3 outliers did not make the estimated cost saving statistically significant An acceptability curve (discounting both costs and effects at 6%) showed there is a 71% chance that metformin is cost-saving and a 95% chance that the cost-effectiveness is < £1600 per life-year gained Other sensitivity analyses assumed a 50% increase in costs under metformin treatment (ICER = £948), a 50% decrease in costs (cost savings of £942) and doubling of costs of metformin itself (cost saving of £106). Results were robust for Tobit or Poisson estimation	Authors conclude that "cost savings are largely due to the lower hospital in-patient costs incurred secondary to the major reduction in the risk of myocardial infarction for patients on metformin", but indicate that they are not sure of the mechanism that leads to this result They postulate there are likely reductions in indirect costs and increases in intangible benefits not measured in their study

Appendix 33

Data extraction table for economic evaluations: surgery

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Martin *et al*., 1995[314]. See Clegg *et al*., 2002[27] for all other information van Gemert *et al*., 1999[317]. See Clegg *et al*., 2002[27] for all other information Chua *et al*., 1995[319]. See Clegg *et al*., 2002[27] for all other information Sjostrom *et al*., 1995[315]. See Clegg *et al*., 2002[27] for all other information						
Clegg *et al*., 2002[27] **Intervention**: three types of surgery vs conventional non-surgical treatment **Economic evaluation type**: cost–utility analysis **Country and currency**: UK, 2000 £	**Intervention**: gastric bypass, VBG and adjustable gastric banding vs conventional treatment **Outcomes**: QALYs based on estimates from literature and work by group. No adjustments made for differential effects on postoperative length of life	**Efficacy data**: systematic review. 36% weight loss for bypass, initial 25% loss followed by 2 percentage point gain per year for 5 years for VBG, initial 20% loss increasing to 33% loss by year 5 for adjustable gastric banding **Mortality and morbidity**: systematic review **QALY data**: authors' work **Cost data**: systematic review	20-year model for baseline cohort of 100 people. The cohort had an average age of 40 years and 90% were female. Average body weight was 135 kg (BMI = 45 kgm^2) Only postoperative deaths are included. Differences in the incidence in diabetes are incorporated into the model but do not affect mortality Costs and outcomes are both discounted at 6% for the base-case results The perspective is that of the health service provider. Productivity losses are not included	The cost per additional QALY through surgery rather than conventional treatment was £10,237 for VBG, £8527 for adjustable gastric banding, and £6289 for Roux-en-Y gastric bypass Adjustable gastric banding had the highest costs and a tiny improvement in QALYs over gastric bypass, so gastric bypass is preferred to adjustable gastric banding on cost per QALY grounds The cost per additional QALY from gastric bypass rather than VBG was £742	Sensitivity analyses were conducted on a range of factors pertaining to procedure costs and effects: increase in hospital length of stay, surgery cost increases, use of effectiveness rather than efficacy data, non-surgical assumptions, surgeon experience and cost of diabetes. The results from these analyses indicated that surgery was a cost-effective alternative to non-surgical management, although the estimate of the cost per additional QALY varied somewhat	The authors conclude that surgical rather than non-surgical treatment may be cost-effective for society. In the discussion, they qualify the effects of some of their assumptions. However, some of the assumptions are conservative, e.g. ignoring effects on life expectancy from reduced weight or reduced secondary disease, or the discounting of QALYs at 6%
Segal *et al*., 1998[316]: see page 437 in Appendix 34 for a review of this study.						

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Nguyen *et al.*, 2001[310] **Intervention**: laparoscopic vs open gastric bypass **Economic evaluation type**: cost–utility analysis **Country and currency**: USA, 1999 to 2001 US$	**Intervention**: from May 1999 to March 2001, 155 patients with BMI of 40–60 kg/m^2 were randomly assigned to undergo laparascopic or open gastric bypass **Outcomes**: postoperative anastomotic leak, wound-related complications, late anastomotic stricture and weight loss at 1 year. Also measured resource use during hospitalisation, time to return to activities of daily living, and QoL as measured by SF-36 scores and BAROS outcome	**Efficacy data**: trial data **Quality of life data**: postsurgery surveys using established measures **Cost data**: patient records of hospital data. Costs were estimated using the University of California, Davis, Medical Center's decision support system database. No information about determination of indirect costs was provided	**Methods**: the analysis was on an ITT basis (laparoscopic operations that were converted to open gastric bypass were analysed as laparoscopic) The method of measuring indirect costs was not indicated, although presumably it was calculated based on questions pertaining to time to return to work Discounting was not used, as the maximum follow-up period was 1 year. The year of the cost data is not clearly indicated, and it seems likely that costs may not be adjusted for inflation **Study perspective**: social, due to inclusion of direct health service costs as well as indirect costs due to lost productivity	**Costs**: laparoscopic surgery had higher operating costs but lower length of hospital stay. There were no significant differences in direct health service costs, indirect or total costs **Outcomes**: the total rate of major, minor and late complications did not vary between the treatments. Mean percentage of excess body weight lost was significantly greater at 1-year follow-up for laparoscopic patients at interim points (e.g. during the first and third months after surgery), but was not significantly different at 1 year following surgery **ICER**: incremental cost-effectiveness calculations were not provided. Costs were not significantly different, and the laparoscopic procedure resulted in significantly greater weight loss as well as some benefit in QoL measures during the recovery period	Although statistical tests were conducted for all comparisons in costs and outcome measures, no sensitivity analyses were conducted about any of the assumptions	Although the number of major complications was not statistically different between the two procedures, it is notable that laparascopic gastric bypass resulted in fewer intensive care unit stays, shorter hospital stays, faster recoveries and an earlier return to work than did open surgery. No effort was made to determine the implication of these differences on QALYs, and the measured QoL differences disappeared by the end of the year

SF-36, Short Form 36; BAROS, Bariatic Analysis and Reporting Outcome System.

Appendix 34

Data extraction table for economic evaluations: lifestyle interventions

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Johannesson *et al*., 1992[318] **Intervention**: diet vs drug treatment for hypertension in obese men **Economic evaluation type**: cost-effectiveness analysis and cost–benefit analysis **Country and currency**: Sweden, 1992 Swedish crowns (SEK)	**Interventions**: the drug intervention was a stepped-care approach with atenolol as the drug of first choice; diet. 64 men were randomised and 61 completed the study. Follow-up was for 1 year **Outcome**: life-years saved	**Efficacy data**: measurements on trial patients and data from Framingham study for stroke and coronary disease risk factors **Cost data**: costs included treatment costs minus saved costs of cardiovascular morbidity. Indirect costs were included	**Methods**: used a computer simulation model based on the Framingham logistic risk equations for stroke and CHD. Due to study design, it was not possible to base the cost-effectiveness analysis upon observed risk reduction, so a simulation approach was used. Five simulations were carried out based on a 54-year-old man at entry. LDL cholesterol and triglycerides were not included since it is uncertain whether these risk factors affect the risk for CVD after taking account of the changes in total cholesterol and HDL cholesterol Costs were discounted at 5%. Outcomes were only discounted as part of the sensitivity analysis **Study perspective**: societal perspective, as direct and indirect costs were included	**Costs**: total treatment cost was approximately SEK 8300 for the diet group and SEK 7900 for the drug treatment group **Outcomes**: after 1 year, the diet group lost 7.6 ± SD 3.1 kg while the drug group gained 0.9 ± SD 2.3 kg. DBP and HDL cholesterol had both decreased significantly in drug group relative to diet group **ICER**: in 3 simulations the drug treatment was cost saving, with greater effect at lower total cost. In 2 simulations the diet treatment was cost-effective. Both of these simulations had the same change in (expected or half of expected) for DBP and total cholesterol, and HDL changes led to a reduced risk of CHD. ICER for additional life-year saved from diet vs drug ranged from 46 to 205 K Swedish crowns	Sensitivity analyses were performed using only direct costs and alternative discounting approaches In a cost–benefit analysis, it was indicated that both treatments resulted in a loss compared with no treatment, but that the difference between the treatments was negligible	The authors conclude that non-pharmacological treatment may be less cost-effective than drug treatment, but that more studies and further methodological development are needed

continued

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Kaplan *et al*., 1987[178] Kaplan *et al*., 1988[311] **Intervention**: diet and behaviour therapy, exercise and behaviour therapy, diet and exercise and behaviour therapy, or control education about diabetes **Economic evaluation type**: cost-utility analysis **Country and currency**: USA, 1986 $	**Intervention**: 76 obese non-insulin dependent diabetics were randomised to the four treatment groups. Each group received 10 weekly education sessions about techniques related to the intervention. The diet was an exchange diet (1200 calories per day). Exercise recommendations were based on a graded exercise test **Outcomes**: paper reports on HbA_{1c}, weight, and quality of life at 18 months follow-up. Quality of life was measured using the quality of well-being scale	**Efficacy data**: data were collected at 3, 6, 12, and 18 months following baseline **Cost data**: estimated using 1986 clinical charges in the San Diego community. Treatment costs include charges for history and physical, laboratory work, sessions, and medical consultations. Indirect costs were not considered	**Methods**: change scores were used (i.e., measure at follow-up minus measure at baseline) using the method of planned comparison. (It is not clear if this means by intention to treat.) 6 patients dropped out. Aside from intervention treatment costs, the only other health service use that was tracked was medication use Costs and effects were not discounted **Study perspective**: health care purchaser (direct health service costs)	**Costs**: the costs of the diet and exercise and behaviour therapy programme were estimated at US$1000 – changes in medication use were not significantly different between the group **Effects**: diet and behaviour therapy group lost the most weight, but all lost, weight among all groups was regained by the 18 month follow-up – reduction in HbA1c at 18 months was greatest for the combined diet and exercise and behaviour therapy group ($p < 0.10$) – the increase in QALY for diet and exercise and behaviour therapy versus control education at 18 months was 0.092 ($p < 0.05$) – the diet and behaviour therapy group also had a statistically significant improvement of 0.07 units in quality of well-being **ICER**: US$10,870 per well life year	No formal sensitivity analyses of the assumptions were conducted in Kaplan 1987 With respect to changes in the quality of life, the study did report that in "planned comparisons" the combined treatment group and the diet and behaviour therapy group improvements in quality of life were significantly greater than the control group improvements Kaplan 1988 conducted a sensitivity analysis according to effectiveness of intervention and duration of benefit and found a range of estimates from US$4,503 to US$18,011 per additional well year of life	The authors conclude that benefits in terms of quality of life and HbA_{1c} appear to be independent of weight loss Small sample of self-referred individuals may limit generalisability. But analysis is conservative in that it assumes that benefits do not extend beyond 18 month follow-up and if anything the control group may have had higher other health care costs due to lack of improvement in HbA_{1c}

continued

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Salkeld *et al*., 1997[312] **Intervention**: two lifestyle interventions administered in general practice **Economic evaluation type**: cost–utility analysis **Country and currency**: Australia, 1994 Aus$	**Interventions**: 2 interventions (a video and a video plus written self-help materials) were compared with routine care in general practice. 755 participants were recruited to the study if they had one or more of a set of cardiovascular risk factors (total cholesterol, BMI $> 25\ kg/m^2$, current smoker, elevated BP). Average BMI was $30\ kg/m^2$ **Outcomes**: life-years saved and QALYs gained	**Efficacy data**: trial data were collected during 1990 and 1991 Effectiveness data related to mortality risk after an MI or stroke and QoL after CHD were from published and unpublished studies in 1994 and 1995 **Cost data**: estimated costs of interventions, including estimated changes in pharmaceutical use. Costs of treating CHD events were based on data for MI patients from the Australian GUSTO trial. Indirect costs related to production losses were also obtained from the GUSTO trial	**Methods**: the economic evaluation used a computer simulation model based on risk equations for CHD and stroke from the Framingham heart study. Lifetime costs and effects of the intervention are modelled Costs and benefits were discounted at 5% per year **Study perspective**: societal perspective	**Costs**: total discounted (net?) lifetime costs are indicated to be Aus$286 and Aus$322 for males and females in the video plus self-help group, and Aus$107 for males in the high-risk group **Outcomes**: the full study sample had no benefit in life-years saved or QALYs in the video group, and a negligible improvement in the video plus self-help group. A subgroup of high-risk individuals (DBP >95 mmHg or total cholesterol >6.5 mmol/l) had negligible improvement among males from the video **ICER**: negligible improvements in outcomes made ICERs very high: Aus$152,128 per QALY for males from video, >Aus$11 million for females from video plus self-help, Aus$29,574 per QALY for high-risk males from video	Sensitivity analyses were performed on estimated costs of productivity losses and on maintenance of behaviour change through time The authors found that eliminating the productivity losses added Aus$11,000 per life-year saved or Aus$9,000 per QALY, so it lowered the cost-effectiveness only by a small amount. The second sensitivity analysis assuming that the changes in risk factors persisted for 2 years improved the cost-effectiveness considerably from the video for high-risk males, to an ICER of Aus$5,789 per life-year saved and Aus$4,342 per additional QALY	Possible mistake in Table 4. How can gain in QALYs for males be greater than gain in life expectancy for males from video? Follow-up time was very short, and authors stressed that long-term follow-up was necessary to reduce uncertainty of results. However, without reinforcement it is unlikely that cost-effectiveness could improve Subgroup analysis using data for just obese participants was not performed but would have been relevant for this report. However, average baseline BMI was high

continued

Author, year, intervention/ evaluation type, country	Intervention and outcomes	Sources of data	Methods and study perspective	Results	Sensitivity analyses	Additional comments
Segal *et al*., 1998[316] **Intervention**: range of interventions for primary prevention of type 2 diabetes **Economic evaluation type**: cost-effectiveness analysis **Country and currency**: Australia, 1997 Aus$	**Interventions**: (I) intensive diet and behavioural modification targeted towards all seriously obese; (II) intensive diet and behavioural modification for women with previous gestational diabetes; (III) gastric bypass surgery for seriously obese; (IV) group behavioural modification for overweight and obese men; (V) GP advice for high-risk adults (e.g. BMI > 27 kg/m^2); (VI) media campaign with community support targeted at general population and overweight adults Comparison was with no intervention (NGT or standard care with IGT) **Outcomes**: reduction in diabetes years, and life-years saved	**Efficacy data**: non-systematic review of the literature, with a preference for RCTs with at least 5 years of follow-up, recorded impact on weight and diabetes status, and opinion of research team where evidence was lacking **Prevalence, morbidity and mortality data**: non-systematic review of the literature **Cost data**: intervention costs were constructed by determining programme resources and then applying unit costs, except for the group programme for overweight men, which was measured as the cost of a commercial programme. Health service use costs for management of diabetes were measured using an Australian survey of hospital costs and the Commonwealth Medical Benefits Schedule. Media effort costed for a region of 4 million people	**Methods**: a Markov approach was used to model diabetic state and survival for a 25-year postintervention period. Specific states were normal glucose tolerance, impaired glucose tolerance or NIDDM Data on 5-year transition probabilities between states, annual mortality for men adjusted for metabolic state, and annual mortality for men adjusted for overweight were used Key parameters are provided, including % successful under each intervention, reduced incidence of NIDDM, and mortality relative risk Costs and benefits were discounted at 5% Results are provided for mixed population (NGT and IGT) and IGT only **Study perspective**: healthcare purchaser	**Programme costs**: (I) AUS$2500; (II) AUS$2500; (III) AUS$15,580; (IV) AUS$195 + screening cost of AUS$382 per case found; (V) AUS$420 + screening cost of AUS$53; (VI) AUS$2 million for community of 4.5 million people Downstream cost savings for people who do not develop NIDDM were estimated at Aus$1800/year **Outcomes**: surgery for the seriously obese reduced diabetes years the most and saved the most life-years **ICER (base case)**: group behavioural therapy and media campaign for the general public had cost savings. The diet, behavioural and GP programmes had ICERs of Aus$1000–2600. Surgery for severely obese had an ICER of Aus$12,300 unless targeted to IGT patients (ICER = Aus$4600)	Sensitivity analyses were conducted on the programme effectiveness parameter for all interventions. While the estimated ICER fluctuated or changed to reflect cost savings in some cases, the greatest change in the ICER was about a 50% increase Additional sensitivity analyses were also conducted for the behavioural modification programme for the seriously obese. These included variation in the discount rate, programme cost, effect of success on incidence of NIDDM, life expectancy and baseline risk status	In the effectiveness results, no consistent relationship between reduction in diabetes life-years and life-years gained is observed; the authors speculate that this is because life-years gained reflects all-cause mortality as a function of obesity as well as diabetic state, and average excess weight and success vary across the programmes The authors make the very useful point that the population at risk of type 2 diabetes often does not have access to the level of resources available to treat type 2 diabetes The authors maintain that the level of downstream health savings is an underestimate because some costs to diabetics as well as costs of other diseases caused by obesity have not been included

continued

Appendix 35

Quality assessment table for economic evaluations: pharmacological interventions

Intervention	Orlistat	Orlistat	Sibutramine	Metformin
Economic evaluation: first author and year	Foxcroft, 1999[308]	Lamotte, 2002[312]	BASF Pharma/ Knoll, 2000	Clarke, 2001[87]
Systematic review assessing quality (if applicable)	O'Meara, 2001[25]	NA	O'Meara, 2002[26]	NA
Quality component				
Well-defined question	Yes	Yes	Yes	Yes
Comprehensive description of alternatives	Yes	Not clear	Yes	Yes
Effectiveness established	Yes	Yes	Not clear	Yes
Relevant costs and consequences identified	Yes	Yes	Yes	Yes
Costs and consequences measured accurately	Yes	Yes	Yes	Yes
Costs and consequences valued credibly	Yes	Yes	Yes	Yes
Costs and consequences adjusted for differential timing	No	Yes	Yes	Yes
Incremental analysis of costs and consequences	Yes	Yes	No	Yes
Allowance made for uncertainty in estimates of costs and consequences	Yes	Yes	Yes	Yes
Results/discussion included all issues of concern to users	Yes	Yes	Yes	Yes

Appendix 36

Quality assessment table for economic evaluations: surgical intervention for obese or morbidly obese patients

Intervention	Roux-en-Y gastric bypass vs VLCD	VBG vs no treatment	Laparoscopic VBG vs open gastric bypass	Gastric banding vs VBG vs open gastric bypass vs conventional treatment	Gastric bypass, VBG, adjustable gastric banding and non-surgical treatment	Laparoscopic vs open gastric bypass
Economic evaluation: first author and year	Martin, 1995[314]	van Gemert, 1999[317]	Chua, 1995[319]	Sjostrom, 1995[315]	Clegg, 2002[27]	Nguyen, 2001[310]
Systematic review assessing quality (if applicable)	Clegg, 2002[27]	Clegg, 2002[27]	Clegg, 2002[27]	Clegg, 2002[27]	NA	NA
Quality component						
Well-defined question	Yes	Yes	Yes	Yes	Yes	Yes
Comprehensive description of alternatives	Yes	Yes	Yes	Yes	Yes except non-surgical	Yes
Effectiveness established	Yes	Yes	Yes	Yes	Yes	Yes
Relevant costs and consequences identified	No	No	No	No	Yes	Partial
Costs and consequences measured accurately	Yes (where measured)	Yes (where measured)	Yes (where measured)	Yes (where measured)	Yes	Yes (where measured)
Costs and consequences valued credibly	Yes (direct costs)	Yes (direct costs)	Yes (direct costs)	Yes (direct costs)	Yes	Partial
Costs and consequences adjusted for differential timing	No	Yes	No	No	Yes	NA
Incremental analysis of costs and consequences	No	Yes	No	No	Yes	No
Allowance made for uncertainty in estimates of costs and consequences	No	No	No	No	Yes	Yes
Results/discussion included all issues of concern to users	Unclear	Unclear	Unclear	Unclear	Yes	Yes

The study by Segal and colleagues[316] that included surgery is assessed in Appendix 34.

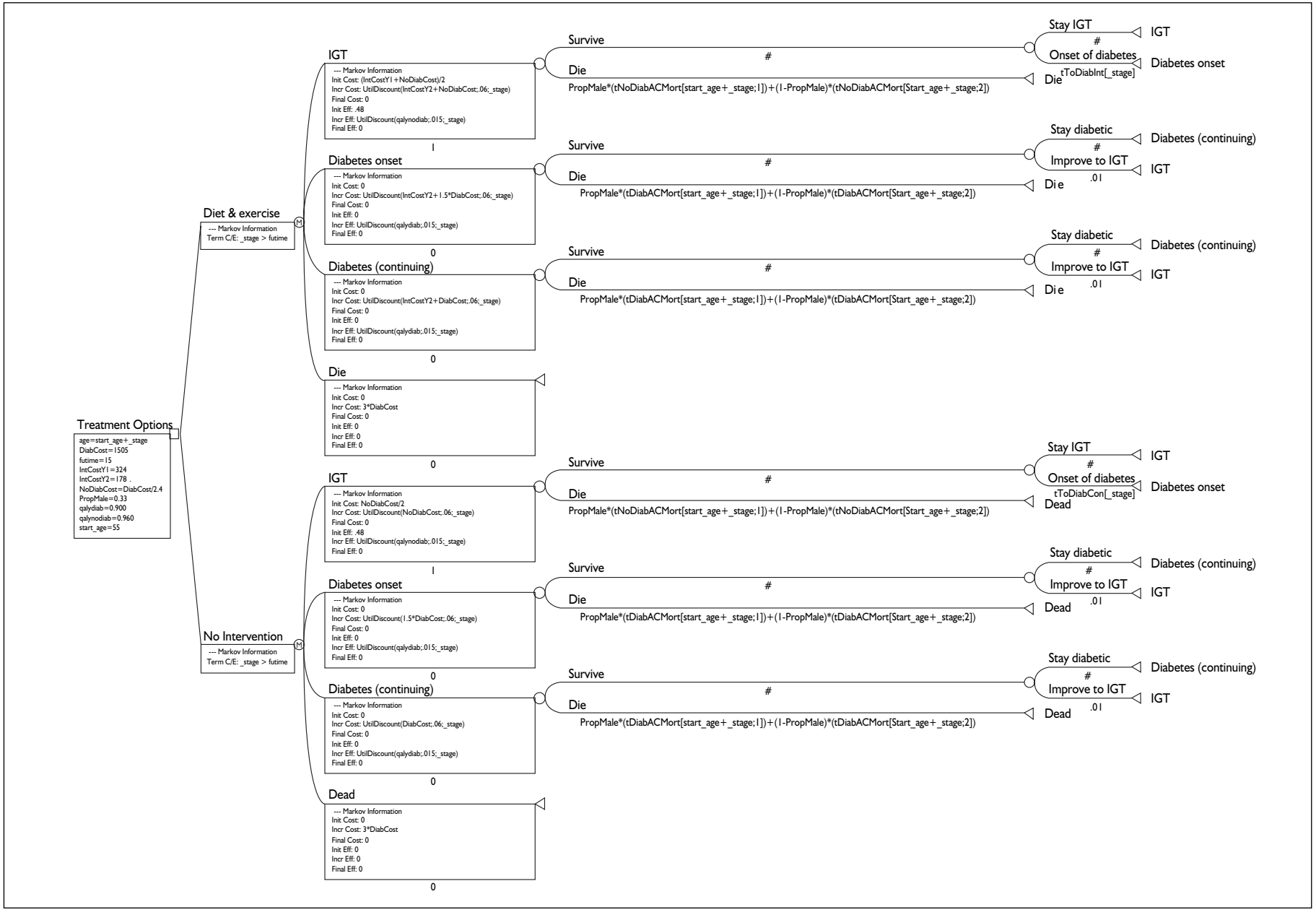
Appendix 37

Quality assessment table for economic evaluations: lifestyle interventions

Intervention	**Diet and behaviour therapy, exercise and behaviour therapy, diet and exercise and behaviour therapy, vs education on diabetes**	**Diet vs drug (atenolol) treatment for hypertension in obese men**	**Video and video plus self-help materials vs nothing for general practice patients at high risk of CVD**	**Six interventions involving diet, behavioural modification and surgery**
Economic evaluation: first author and year	Kaplan, 1987[178] Kaplan, 1988[311]	Johannesson, 1992[318]	Salkeld, 1997[312]	Segal, 1998[316]
Systematic review assessing quality (if applicable)	NA	NA	NA	NA
Quality component				
Well-defined question	Yes	Yes	Yes	Yes
Comprehensive description of alternatives	Yes	Yes	Yes	Yes
Effectiveness established	Yes	Limited	Limited	Not clear
Relevant costs and consequences identified	Partial	Yes	Yes	Not clear
Costs and consequences measured accurately	Yes (where measured)	Yes	Yes	Not clear
Costs and consequences valued credibly	Yes	Yes	Yes	Yes
Costs and consequences adjusted for differential timing	No	Yes	Yes	Yes
Incremental analysis of costs and consequences	Yes	Yes	Yes	Yes
Allowance made for uncertainty in estimates of costs and consequences	Partial	Partial	Partial	Yes
Results/discussion included all issues of concern to users	Yes	Yes	Yes	Yes

Appendix 38

DATA 4.0 tree for base-case Markov model


Treatment Options
age=start_age+_stage
DiabCost=1505
futime=15
IntCostY1=324
IntCostY2=178 .
NoDiabCost=DiabCost/2.4
PropMale=0.33
qalydiab=0.900
qalynodiab=0.960
start_age=55
Diet & exercise
--- Markov Information
Term C/E: _stage > futime
No Intervention
--- Markov Information
Term C/E: _stage > futime
IGT
--- Markov Information
Init Cost: (IntCostY1+NoDiabCost)/2
Incr Cost: UtilDiscount(IntCostY2+NoDiabCost,.06;_stage)
Final Cost: 0
Init Eff: .48
Incr Eff: UtilDiscount(qalynodiab,.015;_stage)
Final Eff: 0
1
Diabetes onset
--- Markov Information
Init Cost: 0
Incr Cost: UtilDiscount(IntCostY2+1.5*DiabCost,.06;_stage)
Final Cost: 0
Init Eff: 0
Incr Eff: UtilDiscount(qalydiab,.015;_stage)
Final Eff: 0
0
Diabetes (continuing)
--- Markov Information
Init Cost: 0
Incr Cost: UtilDiscount(IntCostY2+DiabCost,.06;_stage)
Final Cost: 0
Init Eff: 0
Incr Eff: UtilDiscount(qalydiab,.015;_stage)
Final Eff: 0
0
Die
--- Markov Information
Init Cost: 0
Incr Cost: 3*DiabCost
Final Cost: 0
Init Eff: 0
Incr Eff: 0
Final Eff: 0
0
IGT
--- Markov Information
Init Cost: NoDiabCost/2
Incr Cost: UtilDiscount(NoDiabCost,.06;_stage)
Final Cost: 0
Init Eff: .48
Incr Eff: UtilDiscount(qalynodiab,.015;_stage)
Final Eff: 0
1
Diabetes onset
--- Markov Information
Init Cost: 0
Incr Cost: UtilDiscount(1.5*DiabCost,.06;_stage)
Final Cost: 0
Init Eff: 0
Incr Eff: UtilDiscount(qalydiab,.015;_stage)
Final Eff: 0
0
Diabetes (continuing)
--- Markov Information
Init Cost: 0
Incr Cost: UtilDiscount(DiabCost,.06;_stage)
Final Cost: 0
Init Eff: 0
Incr Eff: UtilDiscount(qalydiab,.015;_stage)
Final Eff: 0
0
Dead
--- Markov Information
Init Cost: 0
Incr Cost: 3*DiabCost
Final Cost: 0
Init Eff: 0
Incr Eff: 0
Final Eff: 0
0
Survive
#
Die
PropMale*(tNoDiabACMort[start_age+_stage;1])+(1-PropMale)*(tNoDiabACMort[Start_age+_stage;2])
Stay IGT
#
Onset of diabetes
tToDiabInt[_stage]
IGT
Diabetes onset
Die
Survive
#
Die
PropMale*(tDiabACMort[start_age+_stage;1])+(1-PropMale)*(tDiabACMort[Start_age+_stage;2])
Stay diabetic
#
Improve to IGT
.01
Diabetes (continuing)
IGT
Die
Survive
#
Die
PropMale*(tDiabACMort[start_age+_stage;1])+(1-PropMale)*(tDiabACMort[Start_age+_stage;2])
Stay diabetic
#
Improve to IGT
.01
Diabetes (continuing)
IGT
Die
Survive
#
Die
PropMale*(tNoDiabACMort[start_age+_stage;1])+(1-PropMale)*(tNoDiabACMort[Start_age+_stage;2])
Stay IGT
#
Onset of diabetes
tToDiabCon[_stage]
IGT
Diabetes onset
Dead
Survive
#
Die
PropMale*(tDiabACMort[start_age+_stage;1])+(1-PropMale)*(tDiabACMort[Start_age+_stage;2])
Stay diabetic
#
Improve to IGT
.01
Diabetes (continuing)
IGT
Dead
Survive
#
Die
PropMale*(tDiabACMort[start_age+_stage;1])+(1-PropMale)*(tDiabACMort[Start_age+_stage;2])
Stay diabetic
#
Improve to IGT
.01
Diabetes (continuing)
IGT
Dead

Feedback

The HTA Programme and the authors would like to know your views about this report.

The Correspondence Page on the HTA website (http://www.ncchta.org) is a convenient way to publish your comments. If you prefer, you can send your comments to the address below, telling us whether you would like us to transfer them to the website.

We look forward to hearing from you.

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