

Obesity

Thinking outside the diabetes box: Is it sleep apnoea?



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Obststructive sleep apnoea (OSA) is increasingly recognised among people with type 2 diabetes, particularly among those with marked central obesity and large neck circumference. While OSA has frequently been

completely overlooked in diabetes clinics, it is in fact a common cause of fatigue and may be associated with significant daytime somnolence.

OSA, however, is also associated with hypertension, elevated risks of coronary

artery disease and poorer glycaemic control, making its identification all the more important for people with diabetes. While non-invasive positive pressure ventilation can markedly improve symptoms related to sleep disturbance, the benefits are only apparent as long as treatment is continued, and it is less clear that the metabolic disturbance is substantially improved.

The Look AHEAD (Action for Health in Diabetes) study (Ryan et al, 2003) compared an intensive lifestyle intervention targeting weight loss, with a standard diabetes intervention in obese people with type 2 diabetes. The report by Foster et al (2009;

summarised alongside), is an analysis of the Look AHEAD study and shows that moderate weight loss has a highly beneficial effect on OSA. This important finding demonstrates that the most appropriate long-term objective for people with type 2 diabetes and OSA is weight loss.

In an earlier report, Foster et al (2009) found evidence of at least mild OSA in 86% of

their population of overweight and obese people with type 2 diabetes, and noted an association of OSA with higher BMI and waist circumference.

The only potential challenge in translating this research finding to clinical practice is that there are still no generally agreed symptoms

or questionnaires that reliably predict or exclude OSA, so polysomnography would be required to identify every case of the condition. However, this is probably unnecessary, and in-depth investigation can usually be reserved for people with suggestive symptoms, a high BMI, large waist or neck circumferences, or high blood pressure.

“The most appropriate long-term objective for people with type 2 diabetes and obstructive sleep apnoea is weight loss.”

Foster GD, Sanders MH, Millman R et al (2009) Obstructive sleep apnea among obese patients with type 2 diabetes. *Diabetes Care* **32**: 1017–19

Ryan DH, Espeland MA, Foster GD et al (2003) Look AHEAD (Action for Health in Diabetes): design and methods for a clinical trial of weight loss for the prevention of cardiovascular disease in type 2 diabetes. *Control Clin Trials* **24**: 610–28

ARCHIVES OF INTERNAL MEDICINE



Intensive weight loss programme improved sleep apnoea

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

- 1 There is limited evidence for the improvement of obstructive sleep apnoea (OSA) through weight loss.
- 2 This 4-centre study assessed the effects of weight loss on OSA over 1 year.
- 3 A total of 264 participants with type 2 diabetes and a mean age of 61.2 years, mean weight of 102.4 kg and an apnoea hypopnoea index (AHI) of 23.2 events per hour, were included in the study.
- 4 Participants were randomised to receive either intensive lifestyle intervention (intensive group) or three group diabetes education sessions (education group).
- 5 The intensive lifestyle intervention involved specific education for obese people with type 2 diabetes including a portion controlled diet with liquid meal replacements and 175 minutes/week of moderate intensity exercise.
- 6 After 1 year, participants in the intensive group had lost more weight than those in the education group (10.8 vs. 0.6 kg; $P<0.001$).
- 7 An adjusted decrease in AHI (9.7 events per hour) was observed in the intensive group compared with the education group ($P<0.001$).
- 8 Three times more participants in the intensive group experienced complete remission of their OSA than in the education group at 1 year.
- 9 The authors concluded that in obese people with type 2 diabetes, weight loss will significantly improve OSA.

Foster GD, Borradaile KE, Sanders MH et al (2009) A randomized study on the effect of weight loss on obstructive sleep apnea among obese patients with type 2 diabetes: the Sleep AHEAD study. *Arch Intern Med* **169**: 1619–26

LANCET

Liraglutide well tolerated and induces weight loss

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

- In this study, the tolerability and effect of liraglutide on weight was assessed in obese individuals with type 2 diabetes.
- This double-blind, placebo controlled 20-week trial compared open-label orlistat with liraglutide in 564 people from 19 sites across Europe.
- Participants were between the ages of 18 and 65 with a BMI of 30–40 kg/m², and were randomly assigned to one of four liraglutide doses (1.2, 1.8, 2.4, or 3.0 mg, administered once a day subcutaneously) or to placebo, or orlistat (120 mg, three times a day orally).
- All individuals increased their physical activity throughout the diet and stuck to a 500 kcal per day energy-deficit diet.
- At the end of the 84-week study period those taking liraglutide lost significantly more weight than those in the placebo group ($P=0.003$ for liraglutide 1.2 mg, $P<0.0001$ for liraglutide 1.8–3.0 mg) and those taking orlistat ($P=0.003$ for liraglutide 2.4 mg, $P<0.001$ for liraglutide 3.0 mg).
- More people taking liraglutide experienced over 5% weight loss (76%) than people taking placebo (30%) or orlistat (44%).
- Those treated with liraglutide experienced more nausea and vomiting than the placebo group but it rarely led to discontinuation of treatment.
- The authors concluded that treatment with liraglutide was well tolerated and induced weight loss.

Astrup A, Rössner S, Van Gaal L et al (2009) Effects of liraglutide in the treatment of obesity: a randomised, double-blind, placebo-controlled study. *Lancet* **374**: 1606–16

AMERICAN JOURNAL OF CLINICAL NUTRITION

Oil supplements may aid weight loss

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

- A total of 55 obese postmenopausal women with type 2 diabetes took either conjugated linoleic acid (CLA) or safflower oil (SAF) to observe their effect on body weight and composition.
- This was a double-blind, crossover study of 36 weeks' duration

(including two 16-week diet periods with a 4-week washout period in between).

- CLA supplementation reduced BMI ($P=0.002$) and total adipose mass ($P=0.0187$) without affecting lean mass.
- No effect on BMI or total adipose mass was detected with SAF supplementation, but trunk adipose mass was reduced ($P=0.0422$) and lean mass increased ($P=0.0432$). Fasting glucose was lowered by SAF ($P=0.0343$).
- It was concluded that dietary oil supplements may be beneficial for weight loss, glycaemic control or both.

Norris LE, Collene AL, Asp ML (2009) Comparison of dietary conjugated linoleic acid with safflower oil on body composition in obese postmenopausal women with type 2 diabetes mellitus. *Am J Clin Nutr* **90**: 468–76

DIABETOLOGIA

Lower intensity exercise improves HbA_{1c} levels in T2D

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓

- This study looked at the impact of 6 months of continuous exercise training comprising three supervised sessions per week. Low- to moderate-intensity exercise (55 minutes at 50% of whole body peak oxygen) was compared with moderate- to high-intensity exercise (40 minutes at 75%).

- Fifty obese men with T2D (mean age 59±8 years, BMI 32±4 kg/m²) we included in the study; 37 participants completed the 6-month intervention programme.

- Endurance-type exercise reduced HbA_{1c} levels, LDL-cholesterol concentration and body weight and increased fitness. There was no difference observed between the groups.
- Low- to moderate-intensity exercise was as effective as moderate- to high-intensity exercise in lowering HbA_{1c} levels in obese people with T2D.

Hansen D, Dendale P, Jonkers RA et al (2009) Continuous low- to moderate-intensity exercise training is as effective as moderate- to high-intensity exercise training at lowering blood HbA_{1c} in obese type 2 diabetes patients. *Diabetologia* **52**: 1789–97

JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

Low birthweight results in adverse metabolic outcomes

Readability	✓✓✓✓
Applicability to practice	✓
WOW! factor	✓✓✓✓✓

- This study aimed to establish a link between low or high birth weight and insulin sensitivity by looking a beta-cell function.
- A total of 257 obese or overweight children were divided into three groups by birth weight percentile:

- 44 were small for gestational age (SGA); 161 were appropriate for gestational age (AGA); and 52 were large for gestational age (LGA).
- SGA obese children demonstrated a higher glucose area under the curve and lower insulinogenic and disposition indexes than the other groups.
- It was concluded that SGA obese children have reduced insulin sensitivity and do not adequately compensate for it as they grow. They have adverse metabolic outcomes compared with AGA or LGA children.

Brufani C, Grossi A, Fintini D et al (2009) Obese children with low birth weight demonstrate impaired beta-cell function during oral glucose tolerance test. *J Clin Endocrinol Metab* **94**: 4448–52

“Low- to moderate-intensity exercise is equally as effective as moderate- to high-intensity exercise in lowering HbA_{1c} levels in obese people with type 2 diabetes.”