

Obesity

Obesity in your diabetes clinic: A prominent cardiovascular risk factor



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While obesity is a powerful risk factor for type 2 diabetes, as well as a risk factor for coronary heart disease and stroke, and many people with type 2 diabetes are either overweight or obese, the impact of obesity on risk in people with diabetes has received far less attention. Important new data on 44 042 people enrolled in the Swedish National Diabetes Register (Ridderstrale et al, 2006; abstracted on right) have largely filled this evidence gap.

In agreement with other studies, some 80% of all people with type 2 diabetes were found to be overweight or obese, and obesity was significantly associated with

hypertension, dyslipidaemia (and lipid-lowering drug use) and microalbuminuria, and with somewhat higher levels of HbA_{1c}.

In the 6-year prospective study of 4468 people, higher baseline BMI was also a significant predictor of hypertension and dyslipidaemia, while increasing body weight predicted poorer glycaemic control in diet and tablet-treated patients. Although this was not an intervention study, so that reversibility could not be determined, the implications are clear. Efforts to prevent and limit weight gain, the greater use of weight-neutral hypoglycaemia therapies, and ensuring that obese patients are adequately treated to the relevant cardiovascular prevention targets should all receive higher priority in the diabetes clinic.

JOURNAL OF INTERNAL MEDICINE

Dyslipidaemia treatment is lacking

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

1 This study compared the body mass index (BMI) and cardiovascular risk factors of obese people with type 2 diabetes with normal-weight and overweight people with type 2 diabetes, and investigated changes in weight versus risk factors. The research comprised a 6-year prospective study of 4468 people with type 2 diabetes and a cross-sectional study of 44 042 people with type 2 diabetes, all from the Swedish National Diabetes Register.

2 Of the total study population, 37% were obese, 29% had microalbuminuria, 81% had hyperlipidaemia, 88% had hypertension, and only 11% had blood pressure <130/80 mmHg.

3 The ratio of triglycerides to high-density lipoprotein-cholesterol was, compared with normal-weight people, markedly elevated in the cross-sectional study's obese population (1.9 and 1.1, respectively); mean low-density lipoprotein (LDL)- and total cholesterol levels were similar to that of the normal-weight population. In this population, BMI was found to be an independent predictor of hypertension, hyperlipidaemia and microalbuminuria, but was only slightly associated with HbA_{1c} and not with LDL- or total cholesterol.

4 A change in BMI in the prospective study was found to be associated with a change in HbA_{1c} in people treated with oral hypoglycaemic agents and diet, but not with insulin.

5 Increases in BMI were associated with hypertension.

6 This study shows that cardiovascular risk factors are more marked in overweight and obese people with type 2 diabetes, and that they are often inadequately treated.

Ridderstrale M, Gudbjornsdottir S, Eliasson B et al (2006) Obesity and cardiovascular risk factors in type 2 diabetes: results from the Swedish National Diabetes Register. *Journal of Internal Medicine* **259**: 314–22

DIABETIC MEDICINE



BMI should not influence choice of oral agent

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

1 Few data exist on how glycaemic response to oral agents varies with body mass index (BMI); this study investigated the effect of BMI on glycaemic response to sulphonylurea or metformin monotherapy in people with type 2 diabetes; the study also looked at current prescribing practice with regard to these oral agents.

2 BMIs of 3856 people with type 2 diabetes on a sulphonylurea or metformin in 2001–2002 were determined using the Diabetes Audit and Research in Tayside (DARTS) database. The effects of BMI and other confounders on drug response were

examined in 2064 people prescribed metformin or a sulphonylurea between 1994–2002.

3 In 2001–2002, 62.1% of obese (BMI >30 kg/m²) 33.6% of overweight (BMI 25–30 kg/m²) and 13% of normal weight (BMI <25 kg/m²) people were prescribed metformin. Compared with sulphonylureas, treatment with metformin lowered blood glucose levels more effectively in people with lower BMIs, although the authors state that this had little clinical impact.

4 BMI did not influence individuals' glycaemic response to sulphonylurea monotherapy.

5 Regardless of whether they were treated with metformin or a sulphonylurea, the HbA_{1c} reduction in obese people was similar to that in non-obese people. Therefore, the authors conclude that BMI should not influence the choice of oral agent prescribed.

Donnelly LA, Doney ASF, Hattersley AT et al (2006) The effect of obesity on glycaemic response to metformin or sulphonylureas in type 2 diabetes. *Diabetic Medicine* **23**: 128–33

‘Compared with standard advice, carbohydrate restriction was an effective way of achieving short-term weight loss.’

DIABETIC MEDICINE



Bariatric surgery: A good treatment for diabetic nephropathy

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

- 1 Little evidence currently exists indicating a role for obesity in the formation and progression of glomerular lesions.
- 2 This paper discusses a case of a morbidly obese woman with diabetic nephropathy.
- 3 Gastric bypass surgery brought about substantial weight reduction and resolution of proteinuria.
- 4 The reduction of the woman's blood pressure and glomerular hyperfiltration associated with weight loss could be the main contributors to the decrease of serum creatinine levels and proteinuria.

Izzedine H, Coupaye M, Reach I, Deray G (2005) Gastric bypass and resolution of proteinuria in an obese diabetic patient. *Diabetic Medicine* **22**: 1761–2

DIABETOLOGIA



Weight gain may be risk factor for early type 1 diabetes

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

- 1 This study examined if increased weight or body mass index (BMI) are associated with the development of type 1 diabetes in children.
- 2 Anthropometric measurements were assessed in 9248 children diagnosed between 1990 and 2003 in 116 paediatric units in Germany and Austria.

‘Increasing regular physical activity to 45 minutes of walking 3 days a week can improve systolic and diastolic blood pressure, lipid metabolism and body mass index in people with type 2 diabetes.’

DIABETIC MEDICINE



Weight loss from a reduction of carbohydrate intake

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

- 1 The effects of a 3-month programme of reduced-portion, low-fat advice compared with dietary advice to restrict carbohydrate intake in obese people with poorly controlled type 2 diabetes was examined.
- 2 A total of 102 people with type 2 diabetes received group education or individual dietary advice; weight, glycaemic control, lipids and blood pressure were assessed.
- 3 In the low-carbohydrate group there was greater weight loss and improvement of total cholesterol:high-density lipoprotein ratio. However, the intake of saturated fat was greater.
- 4 When compared with standard advice, carbohydrate restriction was an effective way of achieving short-term weight loss, but at the expense of increasing saturated fat intake.

Daly ME, Paisey R, Paisey R et al (2006) Short-term effects of severe dietary carbohydrate-restriction advice in type 2 diabetes – a randomized controlled trial. *Diabetic Medicine* **23**: 15–20

- 3 Children were divided into four groups by age (0–4.9 years, 5–9.9 years, 10–14.9 years and 15–20 years).
- 4 Boys and girls in the three younger age groups had higher standard deviation scores (SDS) for weight and BMI at diabetes onset than the reference population.

- 5 The BMI and weight SDS were higher in the 0–4.9 year age group than in the other groups, and BMI SDS decreased with increasing age at onset.
- 6 A continuous rise in weight and BMI SDS was seen in the cohort over the study period; multivariate analysis showed an influence of male sex and year of onset on BMI SDS and a negative association between BMI SDS and age at diagnosis.

DIABETES RESEARCH AND CLINICAL PRACTICE



Regular walking improves CV risk factors

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

- 1 The aim of this study was to examine the effects of regular walking on cardiovascular (CV) risk factors and metabolic control in people with type 2 diabetes.
- 2 A total of 26 people aged 60 ± 7 years took part in a walking programme for 4 months (that comprised walking for 45–60 minutes three times a week).
- 3 A control group of 26 people received no exercise instructions.
- 4 There were no improvements in blood pressure, body mass index (BMI), fitness, HbA_{1c}, fasting plasma glucose or insulin by intention-to-treat analysis in either group.
- 5 However, in the intervention group, 17 people increased their physical activity and improved systolic and diastolic blood pressures, BMI and total plasma cholesterol.
- 6 No effects on glucose metabolism were observed in either group.
- 7 The study suggests that increasing regular physical activity to 45 minutes of walking 3 days a week can improve systolic and diastolic blood pressures, lipid metabolism and BMI in people with type 2 diabetes.

Fritz T, Wandell P, Aberg H, Engfeldt H (2006) Walking for exercise – does three times per week influence risk factors in type 2 diabetes? *Diabetes Research and Clinical Practice* **71**: 21–7

- 7 The researchers concluded that a higher BMI was associated with younger age at onset of diabetes, implying that increased weight gain could be a risk factor for the early manifestation of type 1 diabetes.

Knerr I, Wolf J, Reinehr T et al (2005) The ‘accelerator hypothesis’: relationship between weight, height, body mass index and age at diagnosis in a large cohort of 9,248 German and Austrian children with type 1 diabetes mellitus. *Diabetologia* **48**: 2501–4