Diabesity Digest

Diabesity Digest summarises recent key papers published in the area of coexistent diabetes and obesity – diabesity. To compile the digest a PubMed search was performed for the 3 months ending December 2012 using a range of search terms relating to type 2 diabetes, obesity and diabesity. Articles have been chosen on the basis of their potential interest to healthcare professionals involved in the care of people with diabesity. The articles were rated according to readability, applicability to practice, and originality.

Diet and lifestyle advice: Cornerstones in the prevention and management of diabesity

David Haslam
GP, Hertfordshire and Chair
of the National Obesity Forum

The Finnish Diabetes Prevention Study (DPS) published in 2003 was remarkable, demonstrating that diet and physical activity measures alone could reduce the cumulative incidence of diabetes in individuals with impaired glucose tolerance (IGT) by 58% (summarised to the right). The long-term follow-up study has equally remarkable findings (Lindström et al, 2013). The original study randomised 522 overweight or obese subjects with IGT to lifestyle intervention or control. The intervention group received a degree of input not unrealistic in a structured primary care setting: goals of reduction in weight by 5%, reduced fat intake and moderate exercise for ≥30 minutes per day. Carbohydrate intake included wholemeal products, vegetables, berries and fruit, alongside high-protein foods. Subjects had seven sessions with a nutritionist during year 1 and every 3 months thereafter, plus individual guidance on increasing physical activity. By the end of year 1, subjects in the intervention group lost an average of 4.2 kg, but gradually returned close to baseline weight during and after the study – a reminder that degree of weight loss need not be huge in order to induce major health benefits. The recent paper is reminiscent of the UK Prospective Diabetes Study (UKPDS) "legacy" paper (Holman et al, 2008). After the DPS ended (prematurely, due to early success), levels of physical activity between the two groups equalised, and the

degree of dietary change between the groups diminished, yet the difference in cumulative incidence of diabetes remained. To quote the authors: "our findings suggest that lifestyle intervention lasting for a median of 4 years can result in long-term protection against type 2 diabetes". A statistically significant difference in body weight between the two groups persisted at 10 years. There was a 32% relative risk reduction, and a 15% absolute risk reduction for a diagnosis of diabetes during the post-intervention follow-up period in favour of the intervention group. The number needed to treat to avoid one case of diabetes was 5.2. Like UKPDS, this shows that prompt, responsible treatment of people with poor glycaemic control has beneficial outcomes years later, even when the intensive treatment is for a short time. Unlike the UKPDS paper, however, which studied newly diagnosed, drug-naïve individuals with diabetes, this paper looks at older, higher-risk patients, for whom a delay or avoidance of diabetes makes a big difference to their onset of complications and life-expectancy.

It is clear from these studies that diet and lifestyle advice, rather than being a detail to dismissively gloss over in the final few seconds of a consultation, are cornerstones of management of diabetes and obesity. ■

Holman RR et al (2008) *N Engl J Med* **359**: 1577–89

Lindström J et al (2003) *Diabetes Care* **26**: 3230–6

Diabetologia

Continued decrease in diabetes risk in long-term follow-up of Finnish Diabetes Prevention Study

Readability	✓✓✓
Applicability to practice	✓✓✓
Originality	✓✓✓

1. This long-term follow-up study aimed to determine if a 4-year lifestyle intervention affected diabetes incidence, body weight, glycaemia or lifestyle in high-risk individuals.

2. The original study randomised 522 overweight, middle-aged men and women with impaired glucose tolerance to an intensive lifestyle intervention group involving weight reduction, dietary modification and increased physical activity, or to a control group, who received general lifestyle information.

3. The primary outcome was a diagnosis of diabetes and secondary outcomes included changes in body weight, glycaemia, physical activity and diet.

4. Following the intervention, study participants without diabetes and willing to continue their participation were followed until diabetes diagnosis, dropout or the end of study. Median post-intervention follow-up was 7 years.

5. There was a 32% relative risk reduction and a 15% absolute risk reduction in the diagnosis of diabetes during the post-intervention follow-up period in favour of those who had received the intervention.

6. The intervention group had lower absolute levels of body weight and plasma glucose, and maintained a healthier diet.

7. Adherence to the lifestyle changes during the intervention period predicted improved outcomes.

Lindström J et al (2013) *Diabetologia* **56**: 284–93

Diabetes Care

Predictors of weight outcomes in lifestyle intervention participants in the US-based Diabetes Prevention Program

Readability ✓✓
Applicability to practice ✓✓✓
Originality ✓✓

1. The Diabetes Prevention Program (DPP) was a multicentre study of 1079 ethnically diverse participants at high risk of developing diabetes.
2. Participants were aged 25 years or over with a BMI ≥24 kg/m² (>22 kg/m² for Asian Americans), impaired glucose tolerance and elevated fasting plasma glucose.
3. The lifestyle intervention group had two goals: to lose 7% body weight and to increase moderate physical activity to ≥150 minutes/week.
4. Lifestyle coaches met with participants to review a 16-session core curriculum that focused on diet, activity and behavioural modification, including individual tailored sessions after the first 6 months.
5. The aim of the substudy was to identify the most important pretreatment characteristics and changes in psychological and behavioral factors that predict weight outcomes in the DPP.
6. At end of the DPP study, 40.5% had achieved the weight loss goal of 7%. The core curriculum resulted in significant improvements in many psychological and behavioral targets.
7. Changes in low-fat diet self-efficacy and dietary restraint skills predicted better long-term weight loss, and the association of low-fat diet self-efficacy with weight outcomes was explained by dietary behaviors.
8. The authors encouraged healthcare professionals who wish to use the lifestyle intervention to be aware of pretreatment characteristics that may affect weight loss, consider prioritising strategies to improve low-fat diet self-efficacy and dietary restraint skills, and examine whether taking these actions improves weight loss outcomes.

Delahanty LM et al (2013) *Diabetes Care* **36**: 34–40 (epub 05.11.2012)

Pediatrics

Effectiveness of lifestyle Interventions in child obesity:

Readability ✓✓
Applicability to practice ✓✓✓
Originality ✓✓

1. This systematic review and meta-analysis examined the impact of lifestyle interventions with a dietary component on weight change/cardiometabolic risks in overweight/obese children.
2. Data from 1975–2010 were reviewed; 38 studies were eligible for inclusion.
3. Lifestyle interventions can lead to improvements in weight and cardiometabolic outcomes. More research into optimal length, intensity and long-term effectiveness is needed.

Ho M et al (2012) *Pediatrics* **130:** 1647–71

Diabetes Care

Looking at ways to change physical activity behaviour in type 2 diabetes

Readability ✓✓
Applicability to practice ✓✓
Originality ✓✓

1. This systematic review and meta-analysis aimed to explore how clinical teams should support adults with type 2 diabetes to achieve and sustain a physically active lifestyle.
2. The review included randomized controlled trials published up to January 2012 to examine the effect of behavioral interventions (compared with usual care) on physical activity/exercise, HbA_{1c} and BMI.
3. Seventeen studies fulfilled the review criteria and were included in the analysis.
4. Behavioural interventions showed statistically significant increases in objective and self-reported physical activity/exercise, including clinically significant improvements in HbA_{1c} and BMI.

Avery L et al (2012) *Diabetes Care* **35:** 2681–9

Diabetes Care

The relationship between BMI measured within a year of type 2 diabetes diagnosis and mortality

Readability ✓✓
Applicability to practice ✓✓✓
Originality ✓✓✓

1. The aim of this large study based in Scotland was to describe the association of BMI with mortality in patients diagnosed with type 2 diabetes.
2. The records of 106 640 patients were examined. Patients aged <30 years at diagnosis were excluded.
3. The association between BMI recorded around the diagnosis of type 2 diabetes and mortality was examined using Cox proportional hazards regression, adjusted for age and smoking status (referent group was BMI 25 to <30 kg/m²). Mean follow-up was 4.7 years.
4. Compared with reference group, mortality risk was higher in patients with a BMI of 20 to <25 kg/m² (hazard ratio [HR], 1.22 [95% CI, 1.13–1.32] in men and HR, 1.32 [1.22–1.44] in women).
5. Mortality risk was also increased in patients with high BMI (e.g., HR, 1.70 [95% CI, 1.24–2.34] in men and HR, 1.81 [95% CI, 1.46–2.24]) in women for those with BMI 45 to <50 kg/m²).
6. Vascular mortality was higher for each 5 kg/m² increase >30 kg/m² but was lower below this threshold.
7. Following further adjustment for HbA_{1c}, year of diagnosis, lipid levels, blood pressure, and socioeconomic status, the results remained similar.
8. This study demonstrated a U-shaped relationship between BMI within a year after diagnosis of diabetes and subsequent mortality.
9. People with a BMI of 25 to <30 kg/m² had the lowest risk of mortality within ≥2 years of diagnosis. Further study is needed to determine if weight-loss interventions reduce mortality in all people with type 2 diabetes.

Logue J et al (2012) *Diabetes Care* (epub 08.11.12)

"The study demonstrated a U-shaped relationship between BMI within a year after diagnosis of diabetes and subsequent mortality."