Can psychological interventions improve glycaemic control?

Adrian Scott, Consultant Physician in Diabetes and General Medicine, Northern General Hospital, Sheffield

Sub-optimal glycaemic control in adults with type 1 diabetes is all too common, and has considerable long-term effects on morbidity and mortality. There are many reasons why this is the case, not least a lack of knowledge and skills. Nevertheless, even after structured education courses such as DAFNE (Dose Adjustment For Normal Eating), over 50% of people with type 1 diabetes will have an HbA$_{1c}$ greater than 8% (DAFNE Study Group, 2002).

Depression, disordered eating habits and other behavioural issues make adherence to a complex regimen of blood testing, assessment of food intake, and insulin dose adjustment very difficult.

There have been few studies assessing psychological interventions in people with type 1 diabetes, and even fewer with interventions that could be applied by diabetes teams with little in the way of psychological training.

In this ambitious study by Ismail and colleagues (summarised alongside), diabetes nurse specialists were taught how to use techniques such as motivational enhancement therapy (MET) and cognitive behavioural therapy (CBT) in the consultation. Both of these have been used with some success in people with substance abuse.

Adults with type 1 diabetes were randomised to MET with or without CBT, but for those receiving combined therapy, despite 12 therapy sessions over 6 months, there was only a small decrease in HbA$_{1c}$ levels (the main outcome measure) and this was not significantly different from the MET without CBT group. While it is all too easy to dismiss these interventions as ineffective, it is quite clear that many people did benefit and, perhaps, if the treatment was extended for a longer period of time and initiated at the point of diagnosis, longer-term benefits may accrue.

What is clear, is that our present methods of helping people with diabetes manage their complex condition are inadequate. Maybe CBT and MET training should be part of the core curriculum for diabetes specialists, whether nurses, dietitians or doctors?

DAFNE Study Group (2002) Training in flexible, intensive insulin management to enable dietary freedom in people with type 1 diabetes: dose adjustment for normal eating (DAFNE) randomised controlled trial. *BMJ* **325**: 746

Strongest barrier to exercise: fear of hypoglycaemia

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

1 The authors of this Canada-based study aimed to determine barriers to physical activity in adults with type 1 diabetes.

2 The Barriers to Physical Activity in Diabetes (type 1; BAPAD1) scale was used to identify barriers to, and factors associated with, exercise.

3 A total of 100 people with type 1 diabetes answered the 44-item questionnaire. Participants' HbA$_{1c}$ levels were obtained from medical records.

4 Mean age of participants was 43.5 ± 11.6 years; duration of diabetes was 23.3 ± 13.2 years; BMI was 25.9 ± 4.9 kg/m^2. Mean HbA$_{1c}$ was 7.7 ± 1.1%.

5 The mean overall BAPAD1 score was 2.51 ± 1.00.

6 The strongest barriers to physical activity had the highest scores: fear of hypoglycaemia (3.58 ± 2.02), work schedule (3.05 ± 1.98), and low levels of fitness (2.83 ± 1.95).

7 A knowledge of insulin pharmacokinetics and strategies to reduce exercise-induced hypoglycaemia were associated with fewer perceived barriers.

8 There was a positive correlation between greater barriers and HbA$_{1c}$ levels ($P = 0.042$) and a negative correlation with well-being ($P < 0.001$).

Brazeau A-S, Rabasa-Lhoret R, Strychar I, Mircescu H (2008) Barriers to physical activity among patients with type 1 diabetes. *Diabetes Care* **31**: 2108–9

Psychological therapy intervention improves HbA$_{1c}$

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

1 The authors of this study aimed to assess whether psychological treatment would improve outcomes in people with type 1 diabetes.

2 A total of 344 adults with type 1 diabetes duration >2 years, and HbA$_{1c}$ levels of between 8.2 and 15% (but without complications or severe comorbid disease), were recruited from eight diabetes clinics in London and Manchester.

3 Participants were randomised into three groups (all continued to receive their usual diabetes care): a control group; a motivational enhancement therapy (MET) intervention group; and a motivational enhancement therapy plus cognitive behavioural therapy intervention group (MET plus CBT).

4 Those in the MET group were offered four individual face-to-face MET sessions, of 50-minutes duration, over 2 months. Those in the MET plus CBT group received the same intervention as the MET group followed by eight sessions of CBT for an additional 4 months.

5 Nurses received 3 months' training to deliver the MET and CBT.

6 HbA$_{1c}$ was measured at 3, 6, 9 and 12 months. The 12-month change in HbA$_{1c}$ in the MET group compared with the control group was −0.19% (95% confidence interval [CI] −0.53% to −0.16%) and in the MET plus CBT group compared with the control group was −0.46% (95% CI −0.81% to −0.11%).

7 MET plus CBT delivered by nurses resulted in modest improvements in 12-month HbA$_{1c}$.

Ismail K, Thomas S, Maissi E et al (2008) Motivational enhancement therapy with and without cognitive behaviour therapy to treat type 1 diabetes. *Ann Intern Med* **149**: 708–19

DIABETES/METABOLISM RESEARCH AND REVIEWS

Characteristics at onset of diabetes have not changed in 25 years

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

1 This retrospective analysis investigated the reasons for an increase in the incidence of type 1 diabetes in children in Sweden.

2 Environmental factors, such as geography and insulin regimen, are thought to account for the increase.

3 Data were collected from 316 children who had been diagnosed with type 1 diabetes during 1976–2000 and were living in the catchment area of the paediatric clinic, University Hospital, Linköping, Sweden.

4 Participants had a mean age at diagnosis of 8.6 years, were diagnosed with diabetes before puberty (defined as <11 years for girls and <12 years for boys), and 171 were male.

5 Clinical characteristics (C-peptide levels, BMI, HbA_{1c}) were collected at diagnosis, and fasting and stimulated C-peptide secretion was measured regularly during the first 5 years.

6 In order to be analysed, the population was divided into five periods according to year of diagnosis.

7 The incidence per 100 000 children <15 years of age of type 1 diabetes increased from 21.9 in the first period, to 39.2 in the latest period.

8 A total of 32.7% of participants had measurable fasting C-peptide levels after 5 years.

9 The clinical characteristics at onset of diabetes have remained unchanged over the past 25 years, as there was no statistically significant difference between them.

Nordwall M, Ludvigsson J (2008) Clinical manifestations and beta cell function in Swedish diabetic children have remained unchanged during the last 25 years. *Diabetes Metab Res Rev* **24**: 472–9

DIABETES CARE

Multisystemic therapy reduces DKA admissions

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

1 The authors of this study set out to determine whether an intensive home-based psychotherapy (multisystemic therapy [MST]) could reduce hospital admissions for diabetic ketacidosis. A total of 127 youths with poorly controlled type 1 diabetes were randomised to receive MST or to a control group.

2 Those in the MST group had significantly fewer hospital admissions over 24 months than the control group ($P=0.019$). At 24 months, the MST-treated group had significantly fewer hospital admissions compared with baseline ($P=0.034$).

3 Intensive behavioural interventions are of value in high-risk groups.

Ellis D, Naar-King S, Templin T et al (2008) Multisystemic therapy for adolescents with poorly controlled type 1 diabetes: Reduced diabetic ketoacidosis admissions and related costs over 24 months. *Diabetes Care* **31**: 1746–7

DIABETIC MEDICINE

CBT improves glycaemic control

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

1 The effectiveness of cognitive behavioural therapy (CBT) versus blood glucose awareness training (BGAT) in reducing HbA_{1c} was assessed in people with type 1 diabetes at 6 and 12 months' follow-up.

2 A total of 86 adults with type 1 diabetes and suboptimal glycaemic control (defined as an $HbA_{1c} \geq 8\%$) were randomised to receive either CBT or BGAT.

3 Neither intervention had a significant impact on HbA_{1c} at 6 and 12 months' follow-up.

4 Lower depressive symptoms were reported at 12 months with both CBT and BGAT compared with baseline ($P=0.01$).

5 In people with high baseline depression scores, CBT was effective at reducing HbA_{1c} at 12 months (mean HbA_{1c} 8.8%) compared with baseline (mean HbA_{1c} 9.5%; $P=0.03$).

6 Group CBT can help to achieve and maintain better glycaemic control in people with type 1 diabetes and comorbid depression.

Snoek FJ, van der Ven NCW, Twisk JWR et al (2008) Cognitive behavioural therapy (CBT) compared with blood glucose awareness training (BGAT) in poorly controlled type 1 diabetic patients: long term effects on HbA_{1c} moderated by depression. A randomized controlled trial. *Diabet Med* **25**: 1337–42

DIABETIC MEDICINE

Quality of life in children with type 1 diabetes

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

1 The factor structures of the general and diabetes-specific quality of life measures in the Pediatric Quality of Life Inventory (PedsQL) Diabetes Module were compared, in terms of psychometric properties and relations to relevant outcomes.

2 The PedsQL was completed by 447 children aged 9 to 15.5 years with type 1 diabetes.

3 There was a moderate to high correlation between the general and diabetes-specific measures of quality of life, but the constructs were differentially associated with relevant diabetes outcomes.

4 There was a stronger association between general quality of life measures and depression.

5 This factor analysis supports the use of a total diabetes quality of life score.

Nansel TR, Weisberg-Benchell J, Wysockit T et al (2008) Quality of life in children with type 1 diabetes: a comparison of general and diabetes-specific measures and support for a unitary diabetes quality-of-life construct. *Diabet Med* **25**: 1316–23

> **"Group cognitive behavioural therapy can help to achieve and maintain better glycaemic control in people with type 1 diabetes and comorbid depression."**