Paediatrics

DIABETIC MEDICINE

Needs of children with T1D in schools

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

1 This observational study aimed to establish the parent's view of what the special needs of children with type 1 diabetes are in the school setting.

2 From the outcomes the authors of the study also aimed to develop a series of interventions that may help children with type 1 diabetes in school and their parents to manage the condition.

3 Parents of children aged 3–18 years with type 1 diabetes completed a self-reporting questionnaire observing the effects of diabetes on children, parents and school personnel.

4 The questionnaire assessed the following: children's integration; glycaemic control; insulin administration; meals; sports; trips; and attitudes of teachers and fellow pupils towards the condition.

5 In total, 499 questionnaires were collected. Only 34% of parents were confident that a teacher could recognise the symptoms of a hypoglycaemic episode. Some parents (17%) experienced problems at school when they informed staff about their child's condition.

6 Five per cent of children were not accepted into the school of their parents' choice, and 8% had to change schools once the patients informed the school of their child's condition.

7 This study identified a number of interventions which would help children's integration into school, including: training sessions on type 1 diabetes, more trained nurses, better resources in schools – from diabetes associations – and improvement in communication between staff and parents.

Amillategui B, Calle JR, Alvarez MA et al (2007) Identifying the special needs of children with type 1 diabetes in the school setting. An overview of parents' perceptions. *Diabetic Medicine* **24**: 1073–79

Addressing parents' concerns for their children with type 1 diabetes

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Children with diabetes spend approximately 25% of their waking day at school. Education authorities have a duty of care to provide support to children with chronic illnesses within the school setting, yet there are concerns that this provision is variable and patchy. With greater emphasis on the importance of tight glycaemic control and with the commercial withdrawal of human mixed insulins used in conventional insulin regimens, many paediatricians in the UK are likely to be changing younger children on to basal bolus insulin regimens. Children in primary schools are unlikely to be able to manage lunchtime injections without at least some support and many young children will require an adult to administer the lunchtime injection.

This study by Amillategui et al (summarised alongside), highlights some of the problems faced by 499 children with type 1 diabetes attending a variety of schools in Spain. The results were stratified according to age of the child and, predictably, problems appeared to decrease as children got older: with 30% of families with 3–6 year old children experiencing problems and only 7% of those, compared with adolescents older than 14 years of age. The kinds of problems reported included and supervision of glucose monitoring, supervision or administration of insulin. Sixteen per cent of families had to make treatment modifications because of a lack of 'co-operation'. Seventy per cent of children were felt to be competent at insulin self-administration and 88% could perform capillary blood glucose concentration. Although 68% of families felt that glycaemic control was satisfactory at school, over two-thirds of them felt that extra adult support at school would be valuable. Eighty-seven per cent of families reported that there were no problems if their child wanted to go on a one-day school trip, but only 34% felt that longer trips were uncomplicated. Families also reported that 14% of schools were either unable, or did not consider it their responsibility, to modify diets to enable children with diabetes to eat healthily at school.

At diagnosis, children with diabetes and their families are offered a plan of diabetes education, allowing them to develop the skills to manage diabetes on a day-to-day basis. Schools are also provided with educational material from a variety of national and local sources and further personalised support and training from local diabetes teams to relevant school staff. Yet, it is unlikely that many teaching staff will become as proficient as parents and carers, which may lead to some misperceptions of what a school may realistically provide in the way of health care. In addition, there are other issues of liability which need to be resolved to protect teaching staff.

A great deal of work needs to be done, ideally at a national level, to develop more precise, disease-specific guidelines for the management of diabetes in schools if we are to look after this population well.

'Student-led intervention may be an easy-to-implement and efficient way of promoting a healthy lifestyle.'

PEDIATRICS

Peer-led health promotion in Canada

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

1 The authors of this prospective pilot study based in Canada, designed and tested a novel health-promotion programme based on peer teaching from older to younger school children ('Healthy Buddies') for elementary schools.

2 Two schools were chosen to take part in the programme (intervention: n=232 children, the whole school; n=151 control).

3 One teacher gave direct instruction for 2–3 hours per week for 21 weeks to older students (4th to 7th grade). These students were then paired with younger students (kindergarten to 3rd grade) for the whole school year.

4 The students learnt three components of healthy living: nutrition, physical activity and healthy body image. They then learnt how to be 'positive buddies' and how to overcome the challenges of living a healthy life.

5 Measurements included: a 9-minute fitness run; a questionnaire to assess healthy-living knowledge; self-competence; body satisfaction; disordered eating symptoms and anthropometry (BMI, blood pressure and heart rate).

6 Both older and younger age groups showed an improvement in healthy- living knowledge, behaviour and attitude scores and a smaller increase in systolic blood pressure, compared to the control group.

7 In the older students, BMI and weight increased less compared to the control group.

8 Student-led intervention may be an easy-to-implement and efficient way of promoting a healthy lifestyle.

Stock S, Miranda C, Evans S et al (2007) Healthy Buddies: A Novel, Peer-led Health Promotion Program for the Prevention of Obesity and Eating Disorders in Children in Elementary School. *Pediatrics* **120**: e1059–68

'Aerobic fitness reduces the difference in insulin sensitivity within BMI categories. This highlights the metabolic benefits of fitness in childhood.'

JOURNAL OF ENDOCRINOLOGICAL INVESTIGATION

CSII versus MDI

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

1 This study aimed to compare two insulin approaches (CSII and MDI) and their 2-year efficacy, to assess which was more effective at reducing HbA_{1c}.

2 A total of 36 children aged 9–18 years with at least 3 years duration of diabetes were enrolled.

3 The children were randomly selected to receive either MDI treatment with once-daily insulin glargine and human regular insulin at meals, or CSII with insulins aspart or lispro.

4 During the first year of therapy, both groups showed a significant decrease in HbA_{1c} but only in the CSII group was this decrease observed in the second year.

Schiaffini R, Patera PI, Bizzarri C et al (2007) Basal Insulin Supplementation in Type 1 Diabetic Children: A Long-term Comparative Observational Study Between Continuous Subcutaneous Insulin Infusion and Glargine Insulin. *Journal of Endocrinological Investigation* **30**: 572–77

OBESITY

Exercise increases insulin sensitivity

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

1 This study was carried out to look at the effects of fatness and aerobic fitness on insulin resistance and sensitivity in children.

2 A sample of 375 children aged 7–9 years were categorised by BMI and by level of aerobic fitness.

3 To calculate indices of insulin sensitivity, fasting blood glucose and insulin levels were measured. Pancreatic ß-cell function was estimated using HOMA.

4 Insulin sensitivity was influenced by BMI, with obese children being most insulin resistant. The study also found that fitness was an important variable – insulin sensitivity was better in those who had greater fitness within each BMI category group.

5 In conclusion, aerobic fitness reduces the difference in insulin sensitivity within BMI categories. This highlights the metabolic benefits of fitness in childhood.

Eisenmann JC, DuBose KD, Donnelly JE (2007) Fatness, Fitness, and Insulin Sensitivity Among 7- to 9-Year-Old Children. *OBESITY* **15**: 2135–44

PNAS

Methyl nitrate as a non-invasive marker

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

1 The authors hypothesised that volatile organic compound profiles may be able to indicate hyperglycaemia in the exhaled air of humans.

2 To test this, they performed 18 tests on 10 children with type 1 diabetes.

3 Exhaled gases and plasma glucose were monitored during constant normoglycaemia (n=5) or initial hyperglycaemia with gradual correction (n=13).

4 Gas chromatography using electron capture and flame ionisation was used to analyse the 1.9 litre gas measurements.

5 There was a statistical correlation found between exhaled methyl nitrate and plasma glucose (P=0.003–0.001).

6 The presence of methyl nitrate may reflect the metabolic alteration accompanying hyperglycaemia. Breath analysis could be developed further as a non-invasive measure of hyperglycaemia.

Novak BJ, Blake DR, Meinardi S et al (2007) Exhaled Methyl Nitrate as a Noninvasive Marker of Hyperglycaemia in Type 1 Diabetes. *Proceedings of the National Academy of Sciences of the United States* **104**: 15613–18