Quality of Life and Glycaemic Assessment Before and After Pump School

Patricia Leahy, Norma O’Toole, Susan M O’Connell, Stephen MP O’Riordan
Department of Paediatrics and Child Health, Cork University Hospital, Ireland

The authors have no disclosures

BACKGROUND

• Type 1 diabetes (T1DM) is one of the most common chronic diseases in childhood with an estimated incidence rate of 29.0 per 100,000 per year in the Republic of Ireland.
• Poorly controlled T1DM is associated with a range of acute and long term complications including microvascular and macrovascular problems, short- and long-term adverse effects on cognitive functioning, and poor psychosocial functioning.
• Improvement in a range of health outcomes, including glycaemic control, health-related quality of life (HRQOL) and family burden have been demonstrated following the commencement of insulin pump therapy in paediatric populations.

OBJECTIVES

• To examine HbA1c trends prior to initiating insulin pump therapy and for 12 months following commencement of pump therapy.
• To evaluate changes in health-related quality of life and family burden in children with T1DM and their families following the commencement of insulin pump therapy.

METHODOLOGY

Design
A prospective cohort study, spanning over 12 months, was implemented.

• A within-subjects design was used to assess health outcomes pre- and post-insulin pump therapy.

Methods
Eligible (Kaufman competency 5/8) children (n=53, Mean age 10.5 years, 51% female) with T1DM, previously treated with multiple daily injections (MDI), were involved in the study.

• Children, parents, extended family and teachers were invited to a novel two day structured educational programme, ‘Pump School’, delivered by a Consultant Led MDT.

• Each Pump School included two age-matched children.

• Insulin Pump therapy was initiated during the second day of Pump School.

• HRQOL (Diabetes Quality of Life for Youths; DQOLY), family burden (Questionnaire for Parents of Children and Adolescents with Diabetes) and HbA1c were recorded pre-insulin pump therapy and at 3, 6 and 12 months following pump school.

RESULTS

![Figure 1: Showing average HbA1c levels in patients who have been grouped according to their baseline (pre-pump) HbA1c.](image)

- A significant (p<0.01) reduction from baseline HbA1c was recorded at 3, 6 & 12 months follow-up for the high baseline HbA1c group. Patients with low baseline HbA1c showed a significant (p<0.05) increase in HbA1c at 3, 6 & 12 months following initiation of insulin pump therapy.

![Figure 2: Showing average scores on the DQOLY.](image)

- Student t-tests showed a significant (p<0.05) increase from pre-pump HRQOL scores at 6 & 12 months following insulin pump initiation.

![Figure 3: Showing average scores on the Questionnaire for Parents of Children and Adolescents with Diabetes.](image)

- Student T-tests showed a significant reduction in family burden scores at 6 (p<0.001) & 12 months (p<0.01) following the commencement of insulin pump therapy.

DISCUSSION

• Similar to previous research, patients with higher baseline HbA1c showed significant improvement in glycaemic control shortly after commencing insulin pump therapy and this improvement was maintained throughout the study period.

• In contrast, patients with lower pre-pump HbA1c showed a significant increase in HbA1c following initiation of insulin pump therapy.

• Since the majority of patients in the low-baseline group had HbA1c levels below the normal range (52mmol/mol), increased HbA1c in this group is considered a positive outcome of insulin pump therapy as it reflects a reduction in the number of hypoglycaemic episodes.

• Patients reported a significant and sustained improvement in HRQOL after commencing pump therapy. Improvement was evident across a wide range of physiological, psychological and social factors such as impact of symptoms, impact of treatment and impact on daily activities.

• Parents reported a significant reduction in diabetes related family burden once insulin pump therapy commenced.

CONCLUSIONS

• Findings suggest substantial improvement in bio-psychosocial functioning following the initiation of insulin pump therapy.

• Improvements in glycaemic control were evident for those patients who struggled to maintain good glycaemic control on a MDI regime.

• HRQOL and family burden improvements were maintained one year after Pump School.

• Further research is warranted to determine whether improvements are maintained longitudinally.

REFERENCES