

Increased insulin requirement may contribute to higher body mass index in children and young people with Type 1 Diabetes Mellitus

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BACKGROUND:

- National paediatric Diabetes Audit 2013-2014 report rising prevalence of obesity in Children and Young People (CYP) with Type 1 Diabetes Mellitus (T1DM)
- Raised body mass index (BMI) is associated with long term complications in T1DM
- Studies report association between poor glycaemic control and increased insulin requirement

AIM:

- To evaluate the factors affecting increased BMI SDS in children and young people with type 1 diabetes mellitus

PATIENTS AND METHODS:

- Study performed at a single paediatric centre between April 2014 to March 2015
- Insulin requirement profile (total daily insulin dose per kilogram body weight), BMI SDS, mean HbA1c over 12 months, age at diagnosis and pubertal status of 102 CYP with T1DM were examined

RESULTS:

- There were 43 males and 59 females of whom 24 were prepubertal, 28 were pubertal and 50 postpubertal
- 56 CYP were on MDI and 42 on insulin pump treatment

Table 1: Demographics

Demographic	Mean	Range
Age at diagnosis (years)	7.79	0.16 to 16.91
BMI SDS	0.89	-3.7 to +3.32
Height SDS	0.02	-2.95 to +2.99
Weight SDS	0.73	-3.02 to +4.48

Table 2: Results

	Mean	Range
Insulin requirement (units/kg/day)	1.01	0.38 to 2.43
HbA1c (mmol/mol) (%)	64 (8.0)	34 to 123 (5.3 to 13.4)
Diastolic blood pressure (mm Hg)	69	51 to 89

CONCLUSIONS:

- There is a significant association between increased insulin requirement (units/kg/day) and high BMI SDS
- Higher insulin requirement was associated with poorer glycaemic control following diagnosis
- There was no significant association between BMI SDS and glycaemic control

Figure 1: Insulin requirement & BMI SDS

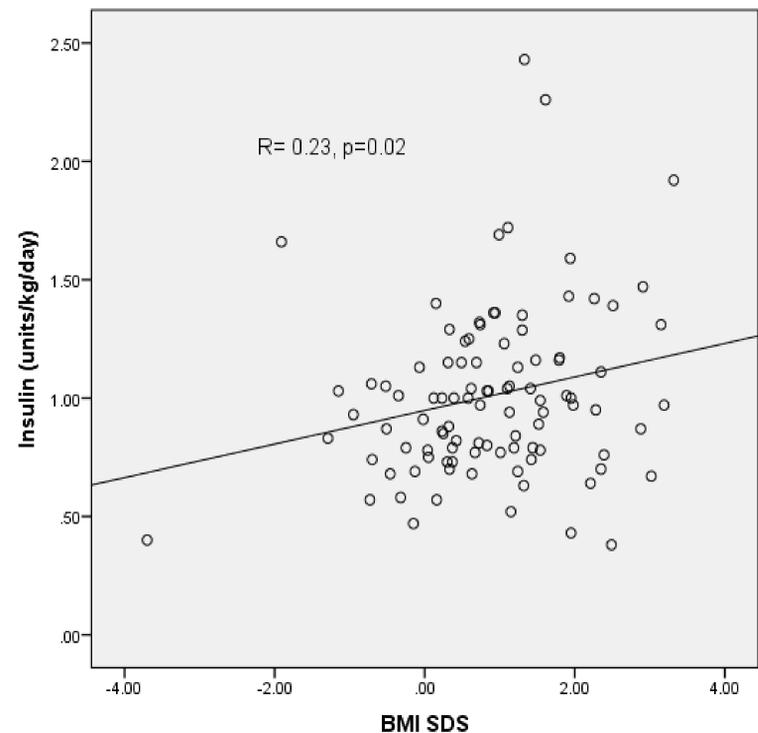


Figure 2: Insulin requirement & HbA1c

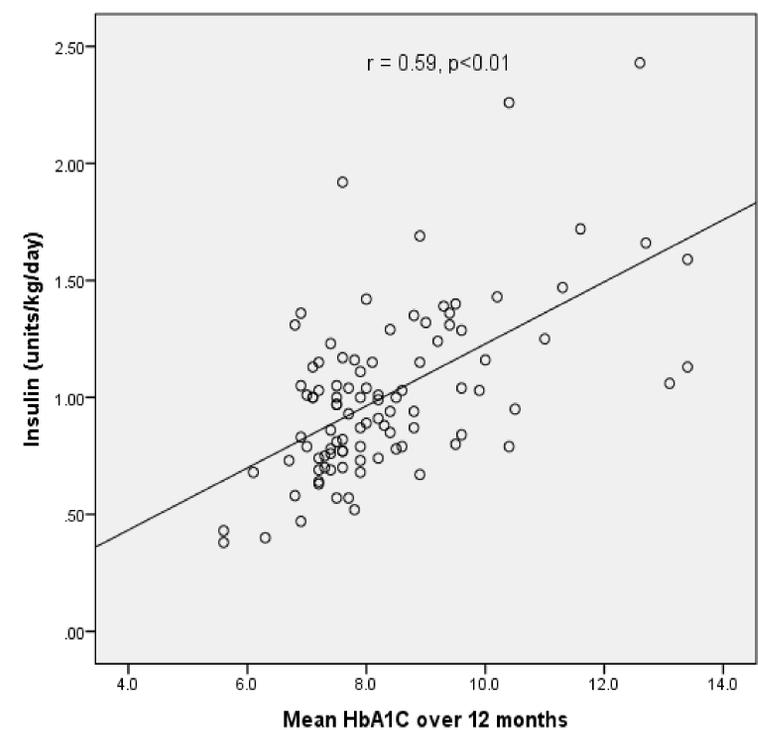


Table 3: Multivariable regression analysis of factors affecting BMI SDS

Variable	B coefficient	p value
Age at diagnosis (years)	-0.004	0.883
HbA1c	0.006	0.929
Gender (F)	0.023	0.921
Pubertal status	0.01	0.973
Insulin (units/kg/day)	0.744	0.019

Disclosure Statement: No conflicts of interest