

Household unemployment and low levels of education are associated with poor glycaemic control in children and young people with Type 1 Diabetes Mellitus

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Authors declare no conflict of interest

Background

Socioeconomic deprivation, obesity and emotional well-being are known to be important determinants of health inequalities and poor glycaemic control in adults with Type 1 Diabetes Mellitus (T1DM). Previously, little research has been done to link these domains with the paediatric population, as determinants of health were not routinely available at an individual level¹. Deprivation of Indices scores have now been published which aid research to evaluate health inequalities¹.

For children and young people with T1DM, optimal glycaemic control (low HbA1c) is imperative to reduce the risk of potential complications. Links between ethnic minorities and high HbA1c have been associated, but little data associates poor glycaemic control and social deprivation².

Aim

This study aims to look at the effect of social deprivation, body mass index (BMI) and patient reported emotional well-being on glycaemic control in children and young people with T1DM.

Method

The postcodes of 124 patients with T1DM, aged 1-18 years, were cross-referenced with Indices of Deprivation (IMD) 2010 to measure their socioeconomic status. Each of the 32,482 small geographic areas (Lower Super Output Areas) in England were ranked from 1 (most deprived) to 32,482 (least deprived). Data was obtained from hospital clinic records over a 12 month period between 1st January 2013 and 1st January 2014. The mean BMI standard deviation scores (SDS) were determined and adjusted for age and sex. The psychological emotional well-being for each patient was measured by using the World Health Organization-5 Well-Being Index (WHO-5). Data was analysed using the Statistical Package for the Social Sciences (SPSS 20.0, Chicago) software. Associations between HbA1c (mmol/mol), IMD indices, BMI SDS and WHO-5 well-being index scores were then determined by the Spearman rank correlation coefficient.

References

1. Zuidwijk CS, Cuerden M, Mahmud FH. Social determinants of health on glycemic control in pediatric type 1 diabetes. *J Pediatr* 2013 Apr;162(4):730-5.
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Results

Of the 124 cases, 63 were female and 61 male, all with T1DM. Records showed that the mean age of diagnosis was 8.2 years (SD 4.1), range 1-18 years. The average HbA1c was found to be 68.1mmol/mol (SD15.1).

Results showed that poor glycaemic control was significantly associated with lower levels of education ($r=-0.22$, $p=0.02$ Figure 1) and unemployment ($r=-0.19$, $p=0.04$). No significance was shown between the level of income ($r=-0.16$, $p=0.07$) and overall deprivation ($r=-0.17$, $p=0.06$). The mean HbA1c was not associated with BMI SDS or emotional well-being.

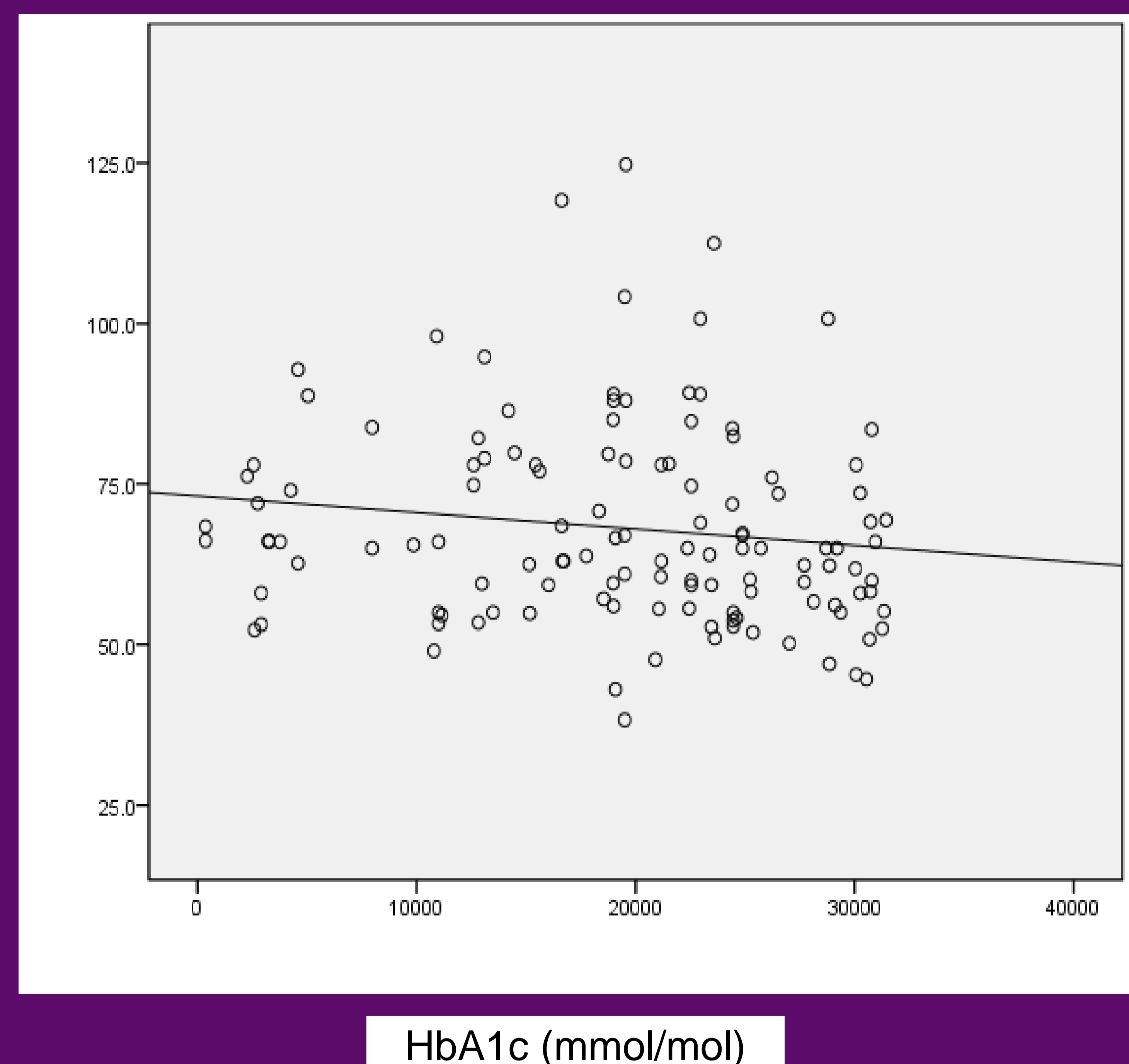


Figure 1: This correlation chart shows the significant association between lower education indices and poor HbA1c control ($r=-0.22$ $p=0.02$)

Conclusion

This study emphasises that the level of education and employment in a household are important factors in achieving good glycaemic control in children and young people with T1DM. All patients should have equal access to clinics specialising in paediatric diabetes regardless of their socioeconomic background. However, it may be important for health policy makers to give focus to those of lower socioeconomic backgrounds in education and planning potential interventions for better diabetes control in children and young people.