Young people with Type 1 Diabetes of non-white ethnicity and lower socioeconomic status have poorer glycaemic control in England and Wales – A national population-based study

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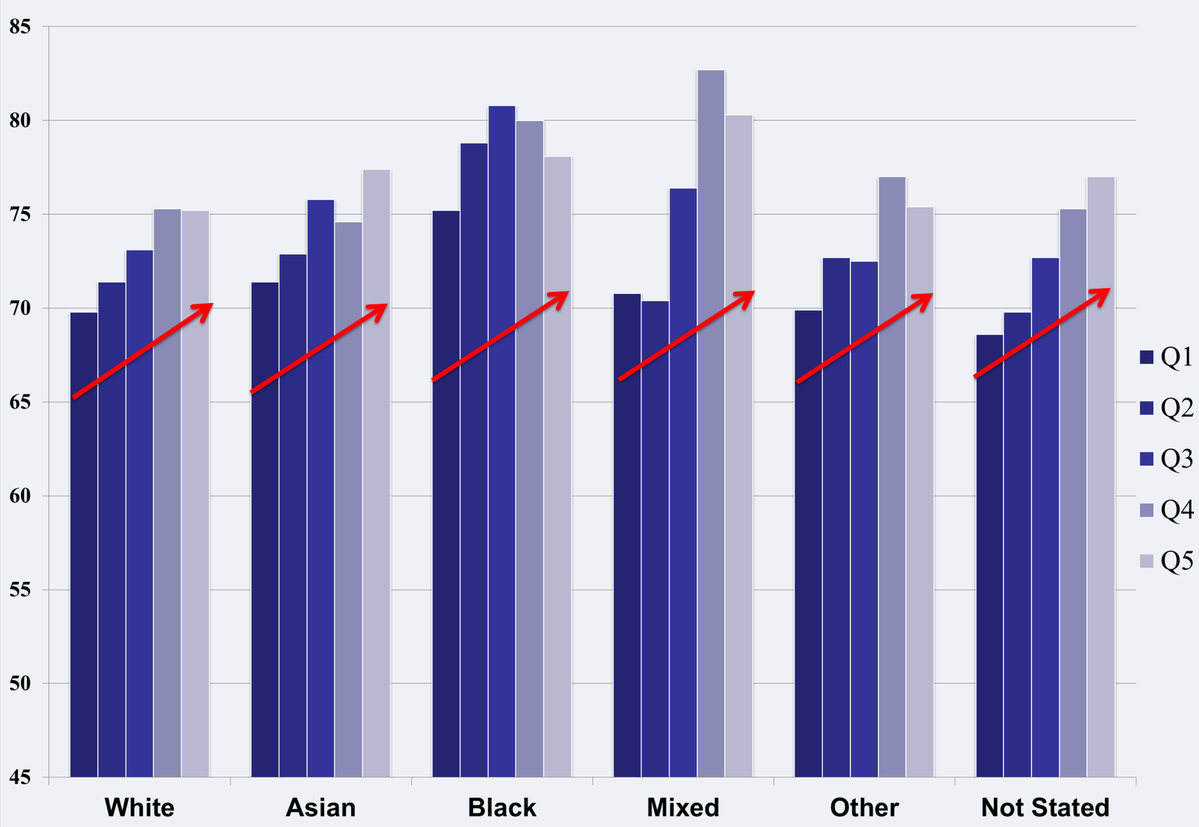
Introduction

The impact of ethnicity & socioeconomic status (SES) on glycaemic control in children with type 1 diabetes (T1D) is poorly understood in England & Wales.

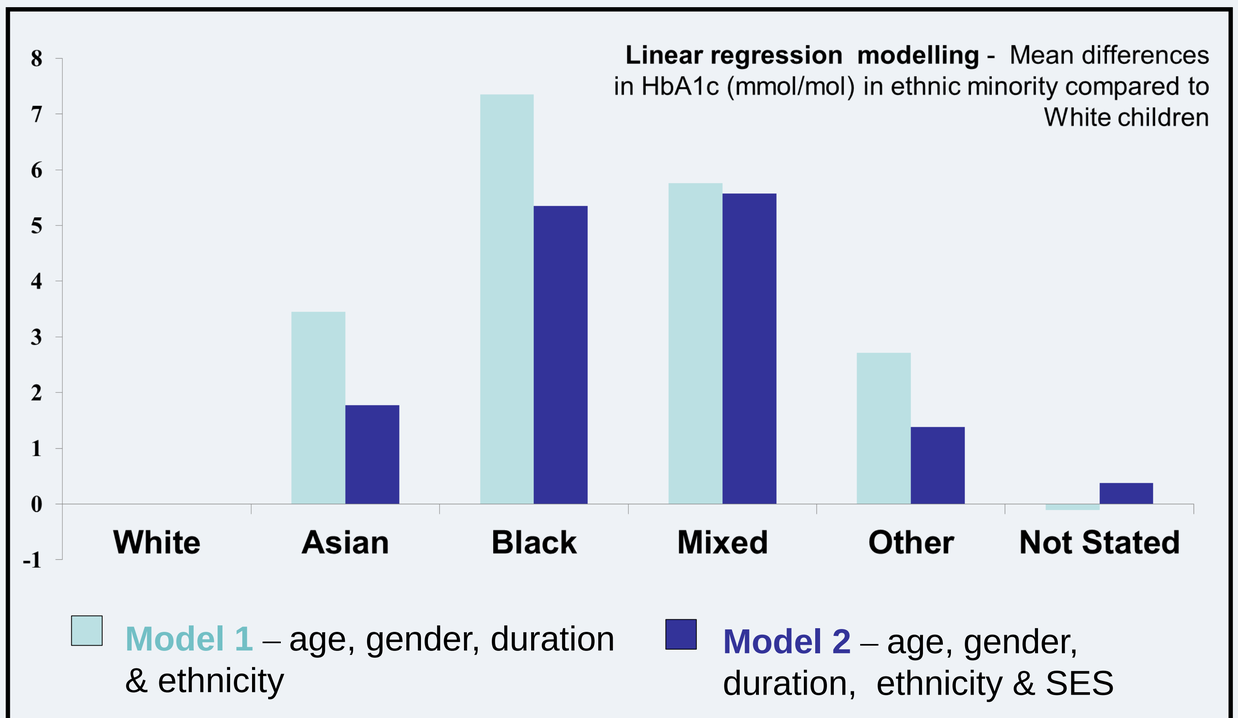
Methods

We studied **18,478** children with T1D **aged <19 years** attending clinics in England & Wales & included in the **2012-13 National Paediatric Diabetes Audit (NPDA).** Self-identified ethnicity was categorized as **White, Asian, Black, Mixed, Other & 'Not Stated'**. SES was estimated using postcode based Index of Multiple Deprivation (in quintiles). **Multivariable linear regression** was used to assess **associations between ethnicity, SES & glycaemic control (mean HbA1$_c$)** accounting for age, gender & diabetes duration. Associations between SES & HbA1$_c$ were tested in models stratified by ethnicity. The impact of insulin pump use on the ethnicity/SES – HbA1$_c$ associations was tested in 13,962 children.



Mean HbA1$_c$ (mmol/mol) by ethnic group and stratified by deprivation quintile

Q1 – Quintile 1; *least deprived* **Q2 – Quintile 2;** *most deprived*



Results

- Ethnic minorities had higher mean HbA1$_c$ compared to White children. Largest differences observed in Black & Mixed children (7.84mmol/mol, 95% CI 5.07-10.6 & 6.81mmol/mol, 4.55-9.08 respectively).
- Lower SES was associated with higher mean HbA$_{1c}$ with a dose effect. Lowest SES group (quintile 5) had on average 6.78mmol/mol (5.63-7.95) higher mean HbA1$_c$ compared to highest SES group, adjusted for ethnicity.
- Estimates for ethnicity were attenuated but remained significant on adjustment for SES. Having a lower SES was associated with higher mean HbA1$_c$ irrespective of ethnicity in stratified analyses.
- Being in the lowest SES group & of Asian (6.90mmol/mol, 2.52-11.28), Mixed (11.26mmol/mol, 6.31-16.21) & Other (8.85mmol/mol, -0.05-17.5) ethnicity was associated with higher mean HbA1$_c$ compared to being in the corresponding lowest SES group & White ethnicity (6.03mmol/mol, 4.72-7.34). (Interaction test between ethnicity & SES was statistically significant , P=0.005).
- Ethnicity & SES remained significant predictors of HbA1$_c$ after accounting for insulin pump use.

Conclusions Ethnicity & SES are independently associated with glycaemic control in T1D children & young people. The effect of ethnicity independent to deprivation on glycaemic control persists after adjustment for pump use, indicating that an alternative approach to intensive insulin therapy for the treatment of glycaemic control is required in vulnerable children.

cpru | Policy Research Unit in the Health of Children, Young People and Families

LTC | Long Term Conditions theme

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