ETHNIC DIFFERENCES IN EARLY GLYCAEMIC CONTROL (HbA1c) IN CHILDHOOD ONSET TYPE 1 DIABETES

Background Ethnic minorities with Type 1 Diabetes (T1D) have worse glycaemic control (higher glycated haemoglobin or HbA1c) and greater risk for vascular complications. However, the impact of ethnicity on early glycaemic control when patients experience transient remission post-diagnosis is limited. We used modelling techniques to examine the independent contribution of ethnicity on HbA1c trajectories during the first six months post-diagnosis of T1D. This is important to investigate as early glycaemic control during the first year post-diagnosis is linked to subsequent future diabetes control including in adulthood.

Methods Routine clinical data on 443 (50% female) children <19 years of age, with T1D and attending one of three paediatric diabetes clinics in east London between Jan 2005 and Dec 2015 were included in the study. Subjects self-identified their ethnicity and were grouped into White, Mixed (any mixed ethnicity), Black, African-Somali, Bangladeshi and Asian-other (any Asian origin excluding Bangladeshi). Socioeconomic status (SES) was derived from postcode using Indices of Multiple Deprivation (IMD) 2010 for England. Linear longitudinal mixed effects models, which allow comparison of population average HbA1c levels and change over time for the different ethnic groups while controlling for potential covariates, were used to assess effects of ethnicity on longitudinal HbA1c trajectories (1,028 HbA1c datapoints) during the first six months post-diagnosis. Models were adjusted for sex, age at diagnosis and socioeconomic status. Quadratic growth curve modelling was used to identify and plot discrete HbA1c trajectories by ethnicity.

Results All ethnic minorities had higher mean HbA1c at diagnosis compared to White children, with largest mean differences in Bangladeshi (9.7 mmol/mol, 95% CI 5.1–14.3), Asian-other (5.8 mmol/mol, 95% CI 2.2–9.3) and Somali (5.2 mmol/mol, 95% CI 0.1–10.2) children. HbA1c decreased by average of 19.5 mmol/mol (–21.8) for all children during the first one month post-diagnosis. Population averaged HbA1c decreased between diagnosis and four months, followed by a gradual increase in HbA1c levels (mean difference –30 mmol/mol between diagnosis and six months). All ethnic groups had higher HbA1c levels throughout this time period compared to White children. SES was not associated with HbA1c at diagnosis nor did it significantly impact the estimates for the ethnicity – HbA1c growth trajectories.

Conclusion Ethnic minorities have worse glycaemic control at diagnosis compared, with largest mean differences observed in Bangladeshi, Asian-other and Somali children and these higher levels track into the first six months after diagnosis. Interventions at the time of diagnosis and during the first few months are needed to reduce the observed inequalities.