OP40 ETHNIC DIFFERENCES IN EARLY GLYCAEMIC CONTROL ($HbA1_c$) IN CHILDHOOD ONSET TYPE 1 DIABETES

[1,2]AR Khanolkar, [1]R Amin, [3]D Taylor-Robinson*, [1]R Viner, [4]J Warner, [5]EF Gevers, [1]T Stephenson. *[1]GOS Institute of Child Health, University College London, London, UK; [2]Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden; [3]Department of Public Health and Policy, University of Liverpool, Liverpool, UK; [4]Department of Child Health, Children's Hospital for Wales, Cardiff, UK; [5]Department of Paediatric Endocrinology, Queen Mary University London, and Barts Health NHS Trust, London, UK*

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Background Ethnic minorities with Type 1 Diabetes (T1D) have worse glycaemic control (higher glycated haemoglobin or $HbA1_c$) 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 $HbA1_c$ 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 $HbA1_c$ levels and change over time for the different ethnic groups while controlling for potential covariates, were used to assess effects of ethnicity on longitudinal $HbA1_c$ trajectories (1,028 $HbA1_c$ 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 $HbA1_c$ trajectories by ethnicity.

Results All ethnic minorities had higher mean $HbA1_c$ 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. $HbA1_c$ decreased by average of 19.5 mmol/mol (−21,–18) for all children during the first one month post-diagnosis. Population averaged $HbA1_c$ decreased between diagnosis and four months, followed by a gradual increase in $HbA1_c$ levels (mean difference −30 mmol/mol between diagnosis and six months). All ethnic groups had higher $HbA1_c$ levels throughout this time period compared to White children. SES was not associated with $HbA1_c$ at diagnosis nor did it significantly impact the estimates for the ethnicity – $HbA1_c$ 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.

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Lifecourse early life

OP41 INFLUENCES OF PRECONCEPTIONAL DIET ON INFANT ANTHROPOMETRY: ANALYSES FROM THE SOUTHAMPTON WOMEN'S SURVEY

SR Crozier*, HM Inskip, KM Godfrey, C Cooper, SM Robinson. *MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, UK*

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Background Increasing evidence suggests that the pre-conceptional period is a critical time for determining future disease risk in the offspring. Maternal obesity before and during pregnancy has important consequences for offspring health, but there is limited information about the effect of pre-conceptional diet.

Methods The Southampton Women's Survey has measured the diet, body composition, physical activity and social circumstances of 12 583 non-pregnant women aged 20 to 34 years living in the city of Southampton, UK. 3158 women subsequently became pregnant and delivered liveborn singleton infants within the study period. Anthropometric measurements were taken from the babies at birth. UK-WHO z-scores were calculated for birthweight, length and head circumference. Principal component analysis of the dietary data collected before pregnancy identified a 'prudent' (healthy) dietary pattern. Using a Directed Acyclic Graph maternal education, pre-pregnancy smoking, maternal age and parity were identified as potential confounders of the association between prudent diet score and body composition at birth. In addition, analyses were adjusted for maternal height, and for sex, age and gestation where the outcome was not a z-score, to improve the precision of the model. The associations were examined using linear regression models, additionally including a term for the interaction of prudent diet score with pre-pregnancy smoking.

Results Whilst a higher prudent diet score was associated with a higher birthweight, length and triceps skinfold thickness, there were statistically significant interactions between pre-pregnancy smoking and prudent diet score for all anthropometric outcomes. Amongst women who did not smoke before pregnancy there was no association between pre-pregnancy prudent diet score and birthweight (β=−0.02 (95% CI −0.07, 0.02) SD per SD increase in prudent diet score, p=0.34) or crown-heel length (β=0.00 (-0.05, 0.04), p=0.75), whereas amongst women who did smoke before pregnancy there was a positive association between pre-pregnancy prudent diet score and birthweight (β=0.18 (0.10, 0.25), p<0.001) and crown-heel length (β=0.13 (0.07, 0.20), p<0.001). Similar interactions were found for all other neonatal anthropometric measurements.

Conclusion Women who have healthier diets before pregnancy have offspring who are larger and longer on average; this effect is much stronger amongst women who smoke before pregnancy than amongst those that don't smoke. Reduced bioavailability of key micronutrients amongst smokers points to potential mechanisms underlying this observation. This study provides further evidence that there may be benefit in developing interventions to support women to improve health-related behaviours before they become pregnant.