OP38 ETHNIC DIFFERENCES IN CHILDHOOD HEIGHT TRAJECTORIES AND THE ROLE OF EARLY LIFE FACTORS: EVIDENCE FROM THE UK MILLENNIUM COHORT STUDY

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10.1136/jech-2017-SSMAbstracts.38

Background Height growth is an indicator of early life growth conditions and is associated with health in later life (including cardiovascular disease and some cancers). Cross-sectional research has shown that ethnic differences in height exist, however little is known about how children from different ethnic backgrounds grow throughout childhood. Using contemporary and UK-representative data, we investigated how childhood height trajectories differ by ethnicity and whether any differences are explained by early life factors.

Methods We used data from the Millennium Cohort Study (~18 000 children born 2000–2002) and included White, South Asian (Indian, Bangladeshi and Pakistani) and Black (Black African and Black Caribbean) singletons with height measured at least 1 time point (n=15,114). Mixed effects cubic growth models were applied to height measurements at ~3, 5, 7 and 11 years to estimate ethnic differences in height trajectories with and without adjustment for early life factors: parental height, prenatal factors (birth order, maternal smoking during pregnancy and age at childbirth), birthweight, and family socio-economic circumstances in infancy (maternal education, family income).

Results Compared to their White counterparts, Black boys and girls were taller at 3 years by 2.1 cm (95% CI: 1.4, 2.9) and 3.1 cm (2.42, 3.73) and subsequently grew at a faster rate on average by 0.24 cm/year (0.13, 0.35) and 0.31 cm/year (0.18, 0.44), respectively. Consequently, height differences at age 11 were much greater. No differences were found between South Asian and White boys. South Asian girls were marginally taller at 3 years by 0.5 cm (0.1, 0.9) but had a slightly slower growth rate between 3 and 11 years by −0.12 cm/year (−0.19,–0.05). Height differences at 3 years increased after adjustment of parental height and further adjustment of birthweight, possibly because ethnic minority children on average did not have taller parents and had a lower birthweight than White children. Adjustment for other early life factors did not alter these differences further.

Conclusion Our study is the first to investigate ethnic differences in childhood height growth of UK children. Black children were taller and grew faster than White children, and this was not explained by early life factors explored. Despite having shorter parents, South Asians had a similar growth trajectory to White children, suggesting a greater intergenerational gain for South Asians. Future research should examine whether the height advantage seen in Black children continues beyond age 11, and the potential health implications of rapid height gain (often accompanied by rapid weight gain).

OP39 REASSESSING PATTERNS AND TIME TRENDS IN BODY MASS INDEX IN BLACK AFRICAN AND SOUTH ASIAN CHILDREN BETWEEN 2007 AND 2013: THE NATIONAL CHILD MEASUREMENT PROGRAMME

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10.1136/jech-2017-SSMAbstracts.39

Background High body fat (BF) levels in UK children are a major problem, with particular concerns about children of South Asian and Black (presumed African) origin. However, available national data are based on body mass index (BMI), which underestimates BF in South Asian children and overestimates BF in Black children. We reassessed childhood BF patterns and time trends between 2007–08 and 2012–13 using ethnicity-specific BMI adjustments to derive adjusted BMI levels (aBMI) that were related to BF in an equivalent way across South Asian, Black and White children.

Methods Analyses were based on National Child Measurement Programme (NCMP) data from 2007–08 to 2012–13 in 3,195,323 aged 4–5 years and 2,962,673 children aged 10–11 years. aBMI values were derived for South Asian and Black children in a separate study, using body composition measured by the deuterium dilution method. These aBMI values related to BF similarly in South Asians, Blacks and Whites. To examine time trends in mean aBMI and in overweight-obesity prevalence by ethnicity, multiple linear regression and logistic regression analyses were used respectively.

Results In the first year (2007–08), mean aBMIs in 10–11 year-olds (boys, girls) compared with Whites (18.64, 18.98 kg/m^2) were higher in South Asians (20.08, 19.94 kg/m^2; both $p<0.001$*) and lower in Black boys but higher in Black girls (18.38, 19.21 kg/m^2; both $p<0.001$*). Mean 5 year changes in aBMI (boys, girls) compared with Whites (0.02, 0.11 kg/m^2) were significantly higher in South Asians (0.16, 0.32 kg/m^2; both $p<0.001$*) and Black boys but not girls (0.13, 0.15 kg/m^2; $p=0.01$, $p=0.41$*). Among South Asians, both means and mean changes were greater among Bangladeshis and Pakistanis than Indians. Ethnic differences in mean aBMI levels were similar in younger children, but time trends were not as pronounced. Analyses examining overweight-obesity prevalence showed similar findings to those using mean aBMI. Parallel analyses in unadjusted BMI (the usual NCMP data presentation) showed similar time trends but different mean BMI patterns; Black children had highest mean unadjusted BMI values while White boys and South Asian girls had the lowest.

*P-Value for difference from Whites

Conclusion These analyses using aBMI data emphasise the particularly high (and rising) burden of BF among UK South Asians, compared with both White and Black children. These patterns are not adequately described by unadjusted BMI data, which tend to overestimate the BF burden in Black children and underestimate that in South Asians.

J Epidemiol Community Health: first published as 10.1136/jech-2017-SSMAbstracts.38 on 2 September 2017. Downloaded from http://jech.bmj.com/ on April 19, 2024 by guest. Protected by copyright.