OP102 CONCORDANCE BETWEEN HOSPITAL DISCHARGE DATA, ELECTRONIC HEALTH RECORDS AND REGISTER BOOKS FOR DIAGNOSIS OF MISCARRIAGE IN A TERTIARY MATERNITY HOSPITAL: A RETROSPECTIVE LINKED DATA STUDY

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Background Miscarriage is one of the most common complications in early pregnancy loss; however, its prevalence varies depending on the type of miscarriage investigated, and the type of measurement used for collecting data. Research assessing the validity of the outcome of a diagnosis of miscarriage at hospital settings is sparse in Ireland. Therefore, the aim of this study was to determine agreement between hospital discharges for the diagnosis of miscarriage between three data sources from January to June 2017 in Ireland.

Methods This retrospective chart review study compared agreement of diagnosis of miscarriage among inpatient admissions between the electronic health records (EHR), the Hospital Inpatient-Enquiry (HIPE), and register books at Cork University Maternity Hospital (CUMH). Also, we compared classification of type of miscarriage at the time of admissions including: incomplete, complete, late and missed miscarriage. Other types of early pregnancy loss (i.e. ectopic and molar pregnancy) were reviewed. After excluding duplicates or missing data, 294 diagnoses of miscarriage were identified in 357 EHR records, 295 in 366 EHR records, and 224 in 260 register books records. Kappa (k), sensitivity, specificity, positive and negative predictive value (PPV & NPV) were calculated to assess level of agreement between the three data sources.

Results Using EHR as a gold standard, HIPE had a sensitivity of 98.3%, specificity of 87.5%, PPV of 96.2%, NPV of 93.9%, with a very good strength of agreement (k=0.88; p-value <0.001). Using EHR as a gold standard, register books had a sensitivity of 97.3%, specificity of 77.2%, PPV of 95.1%, NPV of 85.0 with a good strength level of agreement (k=0.77; p-value <0.001). Approximately, 60% of diagnosis of miscarriage were classified as incomplete miscarriage by the HER and HIPE (n=245 and n=235 respectively) compared to only 3.1% by the register books (n=12). Almost 40% of admissions of miscarriage were classified as missed miscarriages by the registered books. According to HIPE and register books, there were approximately 28% (n=28) late miscarriages, compared to 11% (n=42) identified by EHR.

Conclusion Our findings indicate that HIPE and EHR are reliable and valid databases for monitoring and reporting prevalence of miscarriage in Ireland. However, discrepancy was found when comparing type of admissions of miscarriages. There is a need to standardised classification of type of miscarriages between data registers in Ireland. This is essential to identify the most efficient type of treatment according to the type of miscarriage among women who miscarry.

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OP103 UNDERSTANDING SOCIAL INEQUALITIES IN CHILD MORTALITY: A POPULATION-BASED STUDY IN DENMARK AND WALES

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Background Children growing up in disadvantaged socioeconomic circumstances (SECs) have a higher risk of death. In this study, we aimed to examine whether perinatal factors mediate the relationship between SECs and child mortality.

Methods We conducted national registry linkage studies in two countries, using data for 592,001 births in Denmark (from 2000 to 2014) and 646,303 births in Wales (from 2000 to 2016). Deaths up to age 15 years in Denmark and up to 16.5 years in Wales were identified using death registry data, whilst birth weight and gestational age were obtained using medical birth register data. SECs at child's birth were measured using maternal education in Denmark, which was identified from the Integrated Database for Labour Market Research; whilst in Wales, SECs were assessed based on quintiles of Welsh Index of Multiple Deprivation (WIMD), which was obtained for the mother's postcode from the Welsh Demographics Service Dataset. We built two Cox proportional hazard survival analysis models to estimate the effect of SECs on children mortality and mediation by the perinatal factors: model 1 is the baseline model adjusted for sex and year of birth, model 2 additionally adjusted for birth weight and gestational age. As a sensitivity analysis, we tested whether the effect of SECs on child mortality changes over time, i.e. we assessed the interaction term between SEC measures and birth year.

Results We identified 2,664 deaths in Denmark and 2,987 deaths in Wales. In both countries, lower SECs was associated with a higher risk of child mortality [Denmark: Hazard ratio (HR) 2.78; 95% confidence interval (CI): 1.04 to 7.43 (comparing maternal education with lower secondary or lower and those with university degree); Wales: HR: 1.92; 95%CI: 1.56 to 2.36 (comparing whose mothers from most deprived quintile and those from least deprived quintile)]. After adjustment for perinatal factors, the associations were attenuated (Denmark: HR: 1.65, 95%CI: 0.62 to 4.41; Wales: HR: 1.66, 95%CI: 1.35 to 2.05). Sensitivity analysis did not show the effect of SECs on child mortality changes over time.

Discussion Using data from over 1 million children across two countries, we showed that a substantial proportion of social inequality of child mortality could be explained by perinatal factors. Policies to reduce child mortality in both countries should therefore focus on improving maternal health before and during pregnancy, especially those under socioeconomic

disadvantage. A limitation of this study is that SEC measures are not directly comparable across countries.

OP104 DISTINCT PATTERNS OF SOCIO-ECONOMIC DISPARITIES IN CHILD-TO-ADOLESCENT BMI TRAJECTORIES ACROSS UK ETHNIC GROUPS: A PROSPECTIVE LONGITUDINAL STUDY

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Background In many high-income countries, BMI and levels of overweight and obesity are inversely associated with socio-economic status. Recent evidence suggests that socio-economic disparities in BMI are emerging at a young age. Little is known whether patterns of these disparities vary by ethnicity, especially in the UK. This is the first UK study to our knowledge to examine the pattern of socio-economic disparities in child-to-adolescent BMI trajectories across ethnic groups.
Methods We used data from the UK Millennium Cohort Study, which oversampled children living in the disadvantaged circumstances and in England those from minority ethnic backgrounds. A total of 15,996 children with 62,051 BMI measurements between 3 and 14 years were included in this analysis. Mixed-effects fractional polynomial models were applied to estimate mean BMI trajectories for each socio-economic group (as defined by poverty and maternal education) and differences in BMI between groups at each age. Models were subsequently stratified by ethnicity and adjusted for maternal pre-pregnancy BMI, maternal smoking during pregnancy, birthweight and infant feeding.
Results Overall,the poverty group had a higher mean BMI than non-poverty group from 6 years with a small difference of 0.06 kg/m^2 [95% CI 0.01–0.12], which increased to 0.67 kg/m^2 [0.52–0.82] by 14 years. The income-BMI associations differed by ethnicity. In Whites and South Asians, the BMI difference by income was established at 3 years and widened with age. Among Black African-Caribbeans, there was a reverse socio-economic gradient in BMI, in that the poverty group had a lower BMI (-0.37 kg/m^2 [-0.04, -0.71] at 5 years; -0.95 kg/m^2 [-0.11, -1.79] at 14 years). Differences remained after adjustment for early-life factors. These distinct patterns persisted when using maternal education as the socio-economic indicator.
Conclusion These findings imply that socio-economic advantage may not necessarily be universally associated with lower BMI. The effect of socio-economic circumstances on BMI potentially differs by ethnic group. Given the increasing ethnic diversity in the UK, public health approaches to promote healthy weight need to consider the varying needs of target populations. The positive income-BMI association found in Black African-Caribbean children requires replication in other samples and further investigation into the underpinning cultural and biological mechanisms that may explain these differences.

OP105 ASSOCIATIONS BETWEEN NEIGHBOURHOOD ENVIRONMENTS AND HOSPITAL ADMISSIONS FOR CVD ARE MODIFIED BY SOCIOECONOMIC FACTORS: A PROSPECTIVE STUDY USING UK BIOBANK

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Background Neighbourhood environments may influence risk of cardiovascular disease (CVD), via diet and physical activity (PA) behaviours. However, if the effects of CVD-related neighbourhood risks vary by socioeconomic position, efforts to improve population health by improving neighbourhood built environments may widen health inequalities. We examined whether associations between two neighbourhood characteristics – availability of PA facilities and fast-food store proximity – and CVD-related hospital admissions, were modified by income and area deprivation.
Methods 336,156 UK Biobank participants aged 40–70 years, linked to the UK Biobank Urban Morphometric Platform, were followed up through linked Hospital Episodes Statistics (mean follow-up=6.8 years). We examined whether associations between neighbourhood density of formal PA facilities and proximity of home address to a fast-food/takeaway store (at baseline), and hospital admissions with a primary diagnosis of CVD, were modified by household income or area deprivation (Townsend). We used Cox proportional hazards models, adjusted for likely confounding, and calculated relative excess risks due to interaction (RERI) to assess effect modification on the additive scale. We also examined the combined modifying role of income and deprivation.
Results Household income and area deprivation modified associations between neighbourhood exposures and CVD-related hospital admissions. Greater density of PA facilities may have a larger public health impact in more deprived areas (RERI=0.088), but high-income households benefit more than low-income households (RERI=-0.075). The estimated benefit was restricted to high-income households in deprived areas, where we observed 21% lower hazard of being admitted to hospital with CVD for people living <1km from at least four PA facilities than among people with no local PA facilities (HR=0.79, 95%CI:0.65–0.95). For fast-food proximity, reduced access to fast-food stores might have the biggest impact for low-income households (RERI=0.075), but mostly in less deprived areas (RERI=-0.104). A beneficial association was only observed among low-income households in affluent areas, where the hazard of CVD-related admission was 12% lower among people living ≥2km from a fast-food store than among people living <500m from one (HR=0.88, 95% CI:0.80–0.97).
Conclusion Among mid-life adults in the UK, associations between neighbourhood food and PA environments and hospital admissions for CVD varied according to household income and area deprivation. Results suggest that formal PA facilities may reduce CVD risk in deprived areas, but not among low-income households, raising important implications for health