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, birth weight 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/m² [95% CI: 0.01–0.12], which increased to 0.67 kg/m² [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/m² [-0.04, -0.71] at 5 years; -0.95 kg/m² [-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.
inequalities. Reducing access to fast-food stores may have greatest impact for low-income households but mostly in affluent areas. This may imply a greater range of alternatives to fast food in those areas.

**OP106**

THE CONTRIBUTION OF MATERNAL PSYCHOLOGICAL DISTRESS TO INEQUALITIES IN CHILD MENTAL HEALTH PROBLEMS: DIFFERENTIAL EXPOSURE AND DIFFERENTIAL SUSCEPTIBILITY IN THE UK MILLENNIUM COHORT STUDY

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Background Reducing prevalence and inequalities in child mental health problems (CMHP) will improve life chances and prevent the perpetuation of social inequalities. Research seeking to identify options for reducing health inequalities often aims to identify amenable risk factors on the pathway between socio-economic circumstance (SECs) and health. Such risk factors may create health inequalities via two mechanisms: differential exposure (risk factor is more prevalent in disadvantaged groups) and differential susceptibility (health impacts of the risk factor are worse in disadvantaged groups). Most research focuses on differential exposure, using mediation analysis. However, most mediation methods produce inaccurate estimates if differential susceptibility (i.e. an interaction) is present. Furthermore, differential exposure and differential susceptibility may reveal alternative or complementary policy actions. We used a novel effect decomposition method to examine the contribution of maternal psychological distress (MPD) to inequalities in CMHP in the nationally-representative UK Millennium Cohort Study (born 2000–2002, n=18,000).

Methods SECs (exposure) were represented by maternal education (GCSE grades A*-C, yes/no, age 9 months), MPD (risk factor) by the Kessler scale (continuous, 3y), and CMHP (outcome) by the Strengths and Difficulties Questionnaire (borderline-abnormal, yes/no, 5y). The total effect (TE) of SECs on CMHP was estimated using risk ratios (RR) and decomposed, using Staats’s ‘Med4way’, into: the direct effect and effects via MPD due to: mediation (differential exposure), interaction (differential susceptibility), and mediated interaction (when SECs affect MPD and its impact on CMHP). Confidence intervals were estimated using non-parametric bootstrapping (1000 replications). We adjusted for baseline confounders (ethnicity, maternal age at first birth) in a complete case sample (n=9,777). Sensitivity analyses examined bias from unmeasured intermediate confounding and attrition.

Results 10% children had borderline-abnormal CMH. The RR for the TE of SECs on CMHP was 1.79(1.58–2.04). Two thirds (66%) [0.50–0.81] of this was direct, i.e. not acting through MPD. Four percent (1.2–6.8%) was mediated (differential exposure), 28% (12.1–42.2%) was due to interaction (differential susceptibility), and 2% (0.6–4.3%) was from mediated interaction. Bias from unmeasured intermediate confounding and attrition appeared minimal.

Conclusion The direct effect of SECs on CMHP was large. Maternal psychological distress is also potentially important in the development of inequalities, predominantly due to differential susceptibility (and not differential exposure). Thus analyses which only consider mediating pathways may underestimate its role. Policies to improve MPD have the potential to reduce inequalities in CMHP. Future research to understand the factors that buffer disadvantaged mothers from the consequences of MPD may inform policy content and delivery.

**OP107**

HOW CAN WE MEASURE COMMUNITY RESILIENCE FOR POPULATION HEALTH? AN EVIDENCE SYNTHESIS FOR WHO EUROPE HEALTH EQUITY NETWORK

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Background Resilience is a dynamic process of coping, adaptation and growth in response to threats and can be an attribute of individuals, communities or systems. ‘Creating resilient communities’ is a Health 2020 priority, reflecting the importance of the social environment as a determinant of population health. This is an emergent field for research, with questions of how best to define and measure this complex concept at a community level. This presentation reports on a rapid review and synthesis of measurement strategies conducted for WHO Europe Health Evidence Network (HEN). The review question was: ‘What quantitative and qualitative methods can be used to measure health-related community resilience at a national level?’

Methods The rapid review used HEN Evidence Synthesis guidance. A systematic search of academic and grey literature databases and 73 websites combined key terms for community resilience and measurement. Included languages were English, French and German, and Russian (via an independent search). Study selection was in 2 phases, with an initial focus on Europe. Inclusion criteria were articles that reported outcomes involving measurement of health-related community resilience in all population groups, study designs and settings. Studies on individual/system resilience and those not specifying health and wellbeing measurement were excluded. Data extraction fields included theoretical framework, methods and indicators. Findings were summarised in tables and a narrative synthesis.

Results In total, 3,753 publications were identified and following screening, 33 studies were included; 27 from WHO European Region. The map of literature showed various measurement frameworks in use, however most related to community disaster resilience. We grouped measurement strategies into:

i. Frameworks providing population profiles of resilience factors, using quantitative data
ii. Mixed method assessments incorporating stakeholder views, used mostly for local planning & evaluation
iii. Qualitative and participatory approaches, which involved marginalised communities.

There was a dearth of validated measures and insufficient evidence on national-level indicators, but socioeconomic measurement domains were categorised. Key methodological challenges were highlighted, including definitional issues, data aggregation and lack of attention to equity. Notwithstanding these challenges, the review identified some common principles for measuring community resilience.

A52