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IDENTIFYING HOUSING-LEVEL BARRIERS TO OPTIMAL HEALTH FOR UNDER5S EXPERIENCING HOMELESSNESS: A CITIZEN SCIENCE APPROACH

Diana Rosenthal, 1Michelle Hey, 2Antoinette Schoenfels, 3Carine Lewis, 4Marcella Ucci, 6Andrew Hayward, 7Monica Lakhani, 1UCL Population, Policy and Practice Research and Teaching Department, University College London Great Ormond Street Institute of Child Health, London, UK; UCL Collaborative Centre for Inclusion Health, London, UK; 2UCL Population, Policy and Practice Research and Teaching Department, University College London Great Ormond Street Institute of Child Health, London, UK; 3Specialist Children and Young People’s Services, East London NHS Foundation Trust; 4Department of Population Health, NYU School of Medicine, Center for Healthful Behavioral Change, NYU Langone Health, New York, NY, USA; 5UCL Population, Policy and Practice Research and Teaching Department, University College London Great Ormond Street Institute of Child Health, London, UK; 6Bartlett School of Environment, Energy and Resources, University College London Institute for Environmental Design and Engineering, London, UK; 7University College London Institute of Epidemiology and Health Care, London, UK; UCL Collaborative Centre for Inclusion Health, London, UK; 8Bartlett School of Environment, Energy and Resources, University College London Institute for Environmental Design and Engineering, London, UK; 9University College London Institute of Epidemiology and Health Care, London, UK; UCL Collaborative Centre for Inclusion Health, London, UK; 10University College London Institute of Epidemiology and Health Care, London, UK.

Background The first five years of life are critical for optimal growth, health and cognitive development during which ~90% of brain development occurs. However, many children experience poverty and/or homelessness. Data from 2019 suggested there could be more than 210,000 homeless children in temporary accommodation (TA) or sofa surfing, and ~585,000 who are either homeless or at risk of becoming homeless in England.

Objectives To explore the housing environmental barriers to optimal health for children under the age of five (U5s) experiencing homelessness and living in TA.

Methods The study employed a mixed-methods, participatory design integrating citizen science to identify housing-level barriers to achieving optimal health. Participants were mothers of U5s living in TA, and conveniently sampled at a local charity providing support to U5s experiencing homelessness in Newham, London. Newham has the highest number of children in TA in England (1 in 12 children are homeless) and 1 in 2 children live in poverty.

The study had two parts (i) Housing Survey and (ii) House Visits.

A housing survey utilised citizen science methodology to collect data including mobile phone images and free text captions to describe the TA housing conditions including those which participants considered as barriers to their child’s health. The survey was first piloted over two weeks on five participants, following refinement based on collaborative feedback and dialogue between the doctoral researcher and study participants. To complement the housing survey, the doctoral researcher visited the participants’ TA and took observational notes with an audio-recorder and digital photos.

A thematic analysis was conducted to triangulate themes across the data. Kingfisher’s Unfit Housing UK Research Report guided the categories for the results. Specific factors explored within these data included ease of access to the property, safety risks, disrepair, visible structural problems, poor ventilation, temperature control, space (e.g., for a baby to crawl).

Results In the Housing Survey, fifteen participants collected data over a period of one month at the end of 2019. In 2019–2020, four House Visits were completed (Pre-COVID), but further visits were cancelled due to the pandemic.

Several themes were prominent and overlapped across the Housing Surveys and House Visits, which were noted as risks to child health and development. Thematic categories included (i) overcrowding, (ii) dampness/mould growth, (iii) poor/inadequate kitchen/toilet facilities, (iv) infestations/vermin, (v) structural problems/disrepair, (vi) unsafe electricals, (vii) excessively cold/warm due to inadequate temperature regulation and (viii) unsafe surfaces that risk causing trips or falls.

Conclusions The Early Years is a short, yet vital period to ensure to the next generation have the best start in life, however U5s in TA face numerous barriers in the housing environment which have significant short- and long-term health impacts. Despite a small sample size, findings are consistent with the Children’s Commissioner ‘Bleak houses’ report and likely to be generalisable across other similar families experiencing homelessness in England.

Policy should be enacted to regulate the conditions of TA across England with greater monitoring of and accountability for the safety and regulations to ensure that these environments promote optimal growth and development for U5s.

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THE EDUCATION AND CHILD HEALTH INSIGHTS FROM LINKED DATA (ECHILD) DATABASE: A NEWLY LINKED, DE-IDENTIFIED HEALTH-EDUCATION DATA RESOURCE

Louise Mc Grath-Lone, Nicolás Libuy, Ruth Blackburn, Katie Harron, David Etoori, Ruth Gilbert. 1University College London Institute for Health Informatics; 2Centre for Longitudinal Studies, University College London Institute of Education; 3University College London Great Ormond Street Institute of Child Health.

Background The COVID-19 pandemic has raised concerns about long-term harms to children’s health and education and re- emphasised how strongly interconnected these domains are in childhood and adolescence. It has also highlighted the need to maximise the utility of administrative datasets (which reflect service provision for the whole population) as an evidence base for policy and practice. To date, technical and governance barriers have limited the potential for wide-scale analyses across health and education. Here, we report linking Hospital Episode Statistics (HES) to the National Pupil Database (NPD), which includes important information on children’s functional health and wellbeing, such as attainment in national exams, special educational needs (SEN) support and absence rates. This newly linked health-education database can generate evidence for paediatricians, policymakers and the public on, for example, educational outcomes for children with rare or common health conditions or how SEN support in schools might improve health outcomes.

Objectives 1. Create a de-identified, linked HES-NPD database for all children and young people in England aged 0–24 years who...
were born on or after 01/09/1995 (the Education and Child Health Insights from Linked Data (ECHILD) Database)
2. Assess linkage quality in the ECHILD Database

Methods To create the ECHILD Database, NHS Digital applied multi-step rules-based algorithms to longitudinal records of names, date of birth, gender and postcodes extracted from HES and NPD (to separate them from health- and education-related information). This produced a bridging file of pseudonymised IDs to link extracts of de-identified NPD and HES data (the ECHILD Database). If data linkage is biased (for example, less accurate for ethnic minority groups), then subsequent analyses could underestimate health needs and further entrench disadvantage. We evaluated linkage quality for three academic cohorts born 1st September to 31st August in 1996/7, 1999/00 and 2004/5. Permissions to create the ECHILD Database are described at: https://www.ucl.ac.uk/child-health/echild

Results In total, the newly-created ECHILD Database includes de-identified, linked HES-NPD records for approximately 14.7 million individuals. It currently covers a 25-year period (01/09/1995 to 31/03/2020) and will be updated with more recent data as it is available. Our initial assessments indicate high linkage rates, particularly for more recent cohorts. Of pupils born in 2004/05, 99% linked to a HES record and, overall, 96% of pupils linked (1,609,670,1,674,899). Ethnic minority pupils and those living in more deprived areas were less likely to link; however, differences in linked and unlinked pupil characteristics were moderate to small. Throughout childhood, two-thirds of children had at least one admission to hospital (excluding being born in hospital).

Conclusions The ECHILD Database enables large-scale, longitudinal research exploring interrelationships between health and education. For example, we are exploring how gestational age at birth relates to attainment and SEN. These results will be useful for policymakers and service providers for estimating future need for SEN support in schools based on the population’s birth characteristics. As more recent data becomes available, the ECHILD Database represents a unique opportunity to explore the impact of recent disruptions to health services on health and educational outcomes for children and young people during and after the COVID-19 pandemic.

British Paediatric Neurology Association

922 CLINICAL CHARACTERISTICS OF SEPSIS ASSOCIATED NEONATAL ENCEPHALOPATHY: A SINGLE CENTRE, 2-YEARS RETROSPECTIVE, OBSERVATIONAL COHORT STUDY
1Varun Shanker, 2Pooja Shanker. 1DACH, Jaipur; 2CARDIS Labs

Background Sepsis-associated encephalopathy (SAE) in adults manifests as acute altered mental status, inattention, disorientation, agitation, stupor, coma and is associated with increased mortality. Along with leukoencephalopathy and electroencephalography changes, SAE survivors often have cognitive sequelae, including impaired memory, attention, mental-processing speed, and visual-spatial abilities. Similarly in paediatric population, SAE-related high mortality is thought to be around 33–39%.

Neonatal encephalopathy has been defined as a condition occurring in babies born over 35 weeks gestational age with altered neurological function. The features include disturbance in the degree of consciousness, seizures, cardiorespiratory compromise or abnormal tone and reflexes. Both Neonatal Hypoxic encephalopathy and adult SAE are well-studied entities. However, literature related to Sepsis Associated Neonatal Encephalopathy (SANE) including the diagnostic criteria, clinical features, outcomes and complications is lacking.

Objectives This study aims to test the reliability of proposed SANE definition, analyse clinical characteristics of SANE and compare it with NNS only cases.

Methods A retrospective, observational cohort study was carried out analyzing culture-proven consecutive NNS cases (excluding preterm infants, syndromic presentations, inborn error of metabolism and congenital malformation) admitted to Dr. Atul’s Child Hospital (DACH, Jaipur, India) between January 1st, 2018 and December 31st, 2020. SANE was defined as new-onset dullness, abnormal cry, abnormal tone, abnormal movements or depressed primitive reflexes in presence of clinical signs of NNS such as dusky color, tachycardia, tachypnea, hypoglycaemia, hypotension, oliguria, feed intolerance, hypothermia or fever. The primary outcome was in-hospital mortality. Secondary outcomes were intensive care unit (ICU) length-of-stay (LOS), duration of antibiotic therapy, number of antibiotic escalations. Statistical differences were explored with classical comparison tests, predictors of SANE were modeled by multivariate logistic regression.

Results 59 NNS cases were included of which 25.4% (15/59) met the SANE criteria. Klebsiella Pneumoniae (14/59, 23.7%), Enterobacter sp. (8/59, 13.5%) and E.coli (7/59, 11.8%) were the most common isolated pathogens overall, and there was no difference in the bacterial pathogenic repertoire between the two groups (P=.76). The Median ICU LOS for SANE was less than NNS group, (5 days vs 6 days, P=.16). Overall mortality was high, however, the SANE group did not carry additional mortality (20.4% vs 13.3%, P=.81). SANE cases required fewer days of antibiotic therapy (P=.05) and also fewer antibiotic escalations (P=.002) during the ICU stay. Dullness at the time of sepsis onset was the most reliable factor suggestive of SANE (P<0.005). Multivariate regression model shows that weak cry (P=.02), hypothermia (P=.03) and oliguria (P=.02) are significant predictors of SANE. The AUC in ROC for the SANE prediction model was 0.88 (0.79–0.96) suggesting a good model fit.

Conclusions Unlike adult population, SANE does not carry an additional risk of mortality. Results suggest that SANE recognition may improve antibiotic utilization and response. These conclusions hint towards the possibility that SANE might be the first cluster of clinical signs before an overt systemic inflammatory response syndrome becomes apparent. Autonomic dysfunctions emerged as strong predictor of SANE.