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

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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 by 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.