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Developing a population-scale linked e-cohort for child and maternal health research in Wales

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Background

Socioeconomic factors influence health, wellbeing, education, employment, and mortality outcomes, with children growing up in disadvantaged circumstances at risk of experiencing multiple and compounding disadvantages. Linked e-cohorts offer opportunities to longitudinally investigate multiple influences on child health, while incorporating maternal, perinatal, and household factors that shape outcomes across the life course.

maternal and child life course. Comprehensive linkage, minimal selection bias, and preloaded inequality indicators facilitate research addressing critical questions in child and maternal health, and we invite collaborators to utilise this resource. We are engaging with trusted research environment (TRE) providers to enable access through established application and governance processes.

Methods

We developed three linkable sub-cohorts derived from Welsh birth records and primary care registration data from 2000 onwards. These are further linkable via both the child and mother through health, administrative, social care, and census data. Complementary tables are preloaded with inequality indicators, including area-level deprivation quintiles, Townsend scores, and flags such as looked-after status, court proceedings, free school meals, and special educational needs. Residency data capture occupancy, employment, housing tenure, and linkable co-residents.

Results

The cohort contains 970,880 children with 19.6 million person-years of follow-up (median 10.1 years), of whom 82% have complete follow-up from birth to cohort-end, and 475,170 linked mothers with 10.9 million person-years (median 24 years), including 11.5 years median pre-conception follow-up. Initial analyses demonstrate socioeconomic gradients in healthcare utilisation, educational attainment and attendance, and mortality.

Conclusions

This reproducible methodology provides a robust foundation for investigating health inequalities and outcomes across the

