



Child mortality and deprivation in England

VICKY SLEAP

Every child death is a tragedy. With child poverty rising and deepening, what role does deprivation have in child mortality? What does the National Child Mortality Database in England tell us about what we can do to reduce the number of child deaths?

A boarded up NHS dental clinic on a delapidated housing estate in London.

The National Child Mortality Database (NCMD) is an NHS-funded programme run by the University of Bristol. This year we published a report¹ that found that around 700 child deaths might be avoided in England each year by reducing deprivation. That is more than a fifth of all child deaths. Through this work, we aim to support professionals working with children to learn from child deaths in order to reduce the number of deaths.

Every child death represents a devastating loss for family, friends and the wider community and can affect people for generations. As a society, we must learn from child deaths and put in place interventions to prevent such tragedies in the future. The NCMD was set up in 2018 to perform this task. The NCMD collates and analyses data on all children in England who die before their 18th birthday. The data are collected from the 58 statutory Child Death Overview Panels (CDOPs), which carry out detailed analysis of the circumstances of death and the modifiable contributory factors relevant to the death as part of the child death review (CDR) process. The aim of the CDR process is to identify common themes to guide learning and inform actions to reduce future child deaths.

Child mortality and deprivation in Europe and the UK

Babies, children and young people are some of the most vulnerable members of our society. Early child development plays a major role in future life chances and health throughout the life course.² The younger the child, the stronger the effects of external factors such as poverty and deprivation. Indeed, the quality of a whole society is often expressed in the health of its youngest. The Global Burden of Disease Study reported that the mortality rate of children younger than five in the UK in 2019 was 4.1 per 1,000, the second highest among the 23 countries in Western Europe (average 3.4 per 1,000), after Malta.³ A potential explanation for this high mortality rate is rising child poverty in the UK, given the widespread and consistent associations within and among countries.⁴ Recent studies have also shown that, between 2014 and 2016, the rising infant mortality rate (deaths of children younger than a year) in the UK was driven by a significant increase in the number of live births being registered at gestations below 24 weeks.^{5, 6}



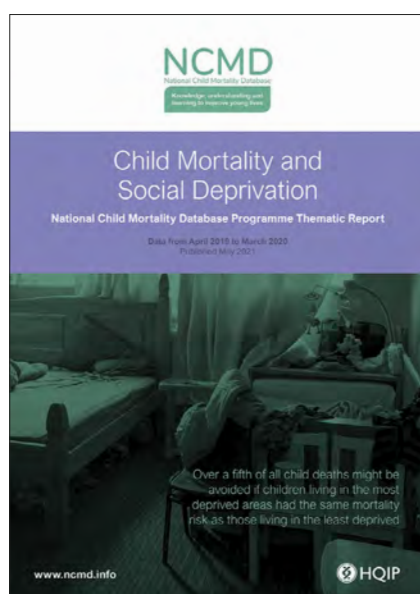
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A systematic review carried out in 2014 examined the relationship between social factors and early childhood health and developmental outcomes. It found strong evidence that factors such as neighbourhood deprivation, lower parental income and unemployment, lower educational attainment, lower occupational social class, heavy physical occupational demands, lack of housing tenure, and material deprivation in the household are all independently associated with a wide range of adverse health outcomes.⁷ The evidence relating to social deprivation and death is strongest for infant mortality. Michael Marmot⁸ has demonstrated clear associations between socio-economic status and life expectancy, as have many others.⁹

NCMD's report

In May this year, NCMD published our first thematic report focused on child mortality and social deprivation in England. This report investigates and quantifies the characteristics of children who have died since the launch of the national data collection and analysis system on 1 April 2019. It examines the link between social deprivation and childhood mortality, and presents for the first time national analysis on modifiable contributory factors, as identified by CDOPs. The report was produced with the help of a working group bringing in expertise in epidemiology, neonatology, child health and public health. The group was also advised by the appropriate parent, patient and public involvement representatives from the NCMD partner charities: The Lullaby Trust, Sands and Child Bereavement UK, as well as by Child Poverty Action Group.

Data on child deaths added to the NCMD becomes richer over time, as CDOPs develop an initial report of a death (which is logged within 48 hours) with additional information from the review process, which may take many months. In this study, we considered both 3,347 deaths reported between April 2019 and March 2020 (of which 3,227 were linked to deprivation deciles) and deaths reviewed in the same period, some of which may have taken place earlier. A total of 2,738 deaths among children were reviewed by a CDOP during the year, of which 2,688 were linked to deprivation deciles.



The key findings of the report are:

1. There was a clear association between the risk of death and the level of deprivation for children who died in England between April 2019 and March 2020. This association appeared to exist for all categories of death except cancer (see figure 1).
2. On average, there was a relative 10 per cent increase in the risk of death between each decile of increasing deprivation.
3. More than a fifth of all child deaths might be avoided if children living in the most deprived areas had the same mortality risk as those living in the least deprived. This translates to at least 700 fewer children dying a year.
4. The proportion of deaths with identified modifiable contributory factors increased with increasing deprivation, with factors relating to the social environment being the most frequently reported (see figure 2).
5. At least one in 12 of all child deaths reviewed in 2019/20 had one or more factors related to deprivation identified at review.
6. There were exemplar projects highlighting how CDOPs had developed local strategies, informed by recurring review themes and local learning, to reduce infant mortality in particular.

Figure 1. The proportion of deaths in each pair of deprivation deciles for all deaths and across each category of death, including 95% confidence intervals. (Cohort 1)

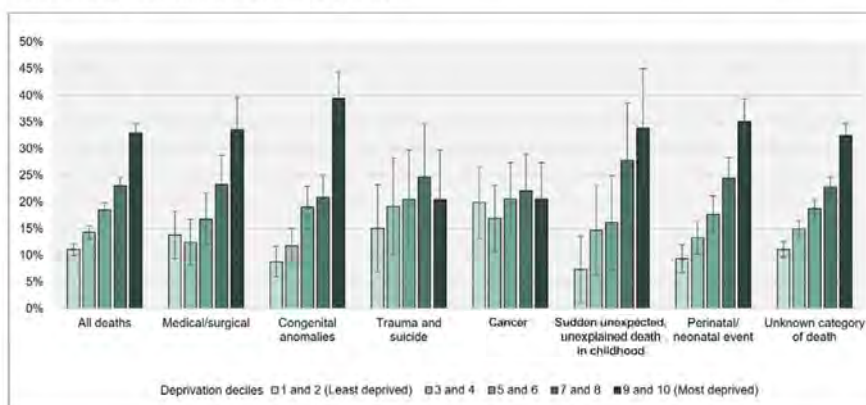
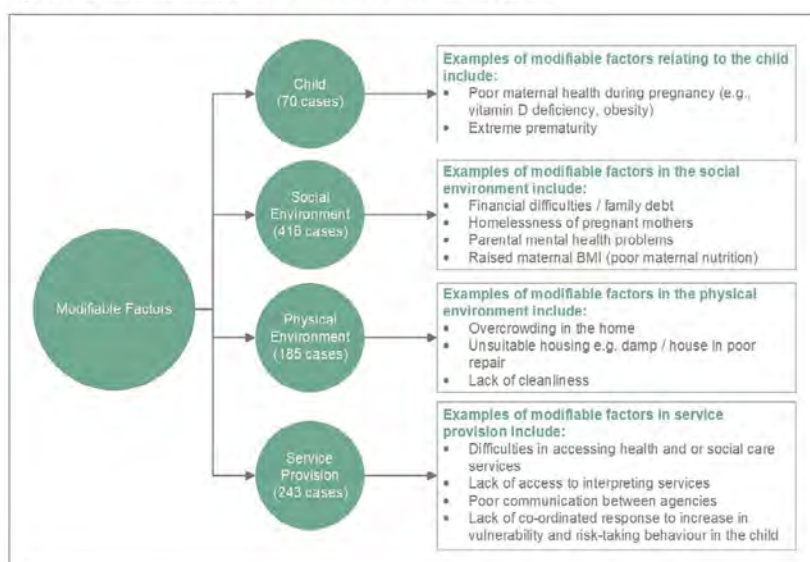


Figure 2. Numbers and examples of modifiable factors identified in Cohort 2



N.B. The number of cases presented in the figure does not sum to total number of cases reported due to some cases having a modifiable factor in more than one category.

The National Child Mortality Database (NCMD) acknowledges that the data presented in this report represent babies, children and young people who have died, and each and every death is a tragedy. They also wish to express their gratitude to the reports' contributors and to all Child Death Review (CDR) professionals for the data submitted to NCMD as part of the national CDR process.



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We undertook qualitative analysis of the deaths reviewed by CDOPs in 2019/2020, which showed that approximately 8 per cent of all child deaths had at least one factor related to deprivation present. These factors included family debt or financial issues, homelessness, housing issues, overcrowding, unemployment and malnutrition.

One of the main themes identified in this analysis was housing, with the most common concerns being lack of cleanliness, unsuitable accommodation (eg, overcrowding) and maintenance issues (eg, damp/mould or the house being in poor repair). There were 123 deaths in which a housing issue was identified. Such issues also included families being based in temporary accommodation, or frequently moving to a new house, creating an unstable living environment for the child.



This single room in a homeless hostel in London was shared by parents and their two children for more than two years. Such so-called temporary accommodation is often unsuitable, overcrowded and in poor repair.

There were also 33 deaths of babies and children in which homelessness was specifically mentioned, related to either the father, mother or child. Factors that contributed to homelessness were mental health conditions in a parent or caregiver and financial issues. In some instances, both factors were present. Homelessness most commonly affected: pregnant mothers, who went on to give birth to babies who subsequently died; families with young children; and young people having left or been forced out of their family home.

Another common factor associated with housing issues was overcrowding. There were instances noted in which residents significantly outnumbered bedrooms, frequently leading to unsuitable and unsafe sleeping arrangements, particularly for babies.

Family debts and financial problems were also identified as common themes relating to deprivation. In some cases, family debt had a considerable impact.

In the review of deaths of children with chronic health conditions in this cohort, there was also evidence that showed that families experienced gaps or difficulties in accessing services, preventing the child from receiving the correct equipment, housing or financial support.

Conclusions

This report demonstrates strong evidence of a persistent relationship between childhood mortality and social deprivation in England. That supports the findings of other published evidence of widespread and consistent associations of poverty, social deprivation and death. The nature and strength of the association between social conditions and health outcomes merits close examination to make reasoned recommendations.

There are specific causes of death that are more or less associated with social deprivation. In this report, for example, we showed that deaths from cancer do not have a clear social pattern; every other cause of death we examined was clearly related to social deprivation, however.

Key findings
 Child Mortality and Social Deprivation
 April 2019 to March 2020

NCMD
 National Child Mortality Database

CLEAR ASSOCIATION between **RISK OF DEATH** and level of **DEPRIVATION** (all categories except malignancy)

Relative **10% INCREASE** in **RISK OF DEATH** between each decile of increasing deprivation (on average)

>1 in 5 CHILD DEATHS might be **AVOIDED** if children living in most the deprived areas had the same mortality risk as those living in the least deprived

INCREASED PROPORTION of deaths with modifiable contributory factors with **INCREASING DEPRIVATION**

1 in 12 CHILD DEATHS reviewed in 2019/20 identified **1 OR MORE** factors related to **DEPRIVATION**

EXEMPLAR PROJECTS highlighting strategies informed by recurring themes and local learning to **REDUCE MORTALITY**

RECOMMENDATION

Use the data in this report to **DEVELOP** and **MONITOR** the **IMPACT** of future strategies to **REDUCE SOCIAL DEPRIVATION** and **INEQUALITIES**

ACTION BY: Policy Makers, Public Health Services, Service Planners and Commissioners at local and national level



This report demonstrates strong evidence of a persistent relationship between childhood mortality and social deprivation in England.

*Camden Community Cycling project
Pedal to the People runs bike skills lessons on an estate in central London where deprivation is relatively high compared to the local area.*



The NHS Long Term Plan sets out a strong commitment for NHS action to improve prevention of illness through tackling the wider determinants of health, including social deprivation and inequalities. Exploring the effects of deprivation on child mortality highlights important characteristics and learning to help inform national and local government agencies commissioning services for families and children. The NHS has an important role to play in tackling wider factors, along with local authorities, public health and, crucially, central government. The government has a role to play in addressing income, housing and other social factors of health. The data collected and analysed by the

NCMD in our report provides a valuable addition to the evidence base needed to inform policies to improve child health and wellbeing.

The report recommends that policy-makers, public health services, service planners and commissioners, at both a local and national level, use this data to develop and monitor the impact of future strategies to reduce social deprivation and inequalities.

Vicky Sleep is the National Child Mortality Database programme manager.

Footnotes

1. NCMD, *Child Mortality and Social Deprivation: data from April 2019 to March 2020*, May 2021
2. CSDH, *Closing the gap in a generation: health equity through action on the social determinants of health*, World Health Organization, 2008
3. R Lozano, N Fullman, JE Mumford and others, 'Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019', *Lancet*, 396(10258), 2020, pp1250-1284
4. R Cheung, *International comparisons of health and wellbeing in early childhood*, Nuffield Trust, 2018
5. PJ Davis, AC Fenton, CJ Stutchfield and ES Draper, 'Rising infant mortality rates in England and Wales—we need to understand gestation specific mortality', *BMJ*, 361(8152), 2018
6. S Nath, P Hardehid and A Zylbersztejn, 'Are infant mortality rates increasing in England? The effect of extreme prematurity and early neonatal deaths' *Journal of Public Health*, 10.1093/pubmed/fdaa025, 2020
7. D Pillas, M Marmot, K Naicker, P Goldblatt, J Morrison and H Pikhart, 'Social inequalities in early childhood health and development: a European-wide systematic review', *Pediatric Research*, 76(5), 2014, pp418-424
8. M Marmot, 'Health equity in England: the Marmot review 10 years on', *BMJ*, 368(8235), 2020
9. See, for example, D Dorling, R Mitchell and J Pearce, 'The global impact of income inequality on health by age: an observational study', *BMJ*, 335(7625), 2007, pp873-875

"Following a long period of year-on-year reductions, Manchester has seen a concerning increase in infant mortality and we were determined to halt this trend. Using national and local data, we were able to highlight emerging patterns and trends associated with infant mortality. This five-year strategy is a clear indication of Manchester's collective commitment to ensuring a reverse in the rise of infant mortality. By co-ordinating efforts across the city, we are confident we can start to see a downward trend once again"

Barry Gillespie
Consultant in Public Health,
Chair of the Manchester Child Death
Overview Panel

Read the full report at ncmd.info/2021/05/13/dep-report-2021

The Manchester Reducing Infant Mortality Strategy (2019–24) highlights a picture of infant mortality rates increasing since 2011–13 following a long period of year-on-year reductions. Using five priority themes, objectives and actions were set to reduce infant mortality, improve maternal and infant health, and support those bereaved:

1. Quality, safety and access to services
2. Maternal and infant wellbeing
3. Addressing the wider determinants of health
4. Safeguarding and keeping children safe from harm
5. Providing support for those bereaved and affected by baby loss

Services recognised the complexity and interrelatedness of the work required, and agreed to co-ordinate activities across all these areas.