

Early birth linked to greater risk of hospital visits during childhood

November 25 2020



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Being born early (before 37 weeks' gestation) is associated with a higher risk of hospital admission throughout childhood than being born at full term (40 weeks' gestation), finds a study published by *The BMJ* today.

Although the risk declined as the [children](#) grew up, particularly after age 2, an excess risk remained up to age 10, even for children born at 38 and 39 weeks' gestation, representing many potentially [vulnerable children](#), say the researchers.

Preterm birth is a major contributor to [childhood](#) ill health. Existing evidence suggests that the risk of illness associated with preterm birth declines as children grow up, but it remains unclear at what age this begins to happen and how these changes vary by week of [gestational age](#) at birth.

To explore this further, a team of UK researchers set out to examine the association between gestational age at birth and [hospital admissions](#) to age 10 years and how admission rates change throughout childhood.

Their findings are based on data from more than 1 million children born in NHS hospitals in England between 1 January 2005 and 31 December 2006. Children were monitored from birth until 31 March 2015 (an average of 9.2 years per child), during which time the researchers analysed numbers of hospital admissions.

Gestational age at birth was analysed in weeks, from less than 28 up to 42 weeks.

Over 1.3 million hospital admissions occurred during the study period, of which 831,729 (63%) were emergency admissions. Just over half (525,039) of children were admitted to hospital at least once during the study period.

After taking account of other potentially influential risk factors, such as mother's age, marital status and level of social deprivation, and child's sex, ethnicity and month of birth, the researchers found that hospital admissions during childhood were strongly associated with gestational

age at birth.

The hospital admission rate during infancy in babies born at 40 weeks was 28 per 100 person years—this figure was about six times higher in babies born extremely prematurely (less than 28 weeks). By the time the children were aged 7-10 years, the hospital admission rate in children born at 40 weeks was 7 per 100 person years—this figure was about three times higher in those born at less than 28 weeks.

But even children born a few weeks early had higher admission rates. Being born at 37, 38, and 39 weeks' gestation was associated with a difference in the rate of admission of 19, 9, and 3 admissions per 100 person years during infancy, respectively, compared with those born at 40 weeks.

The risk of hospital admission associated with gestational age decreased over time, particularly after age 2. However, an excess risk remained up to age 10, even for children born at 38 and 39 weeks' gestation.

Although this excess risk at 38 and 39 weeks was relatively small, the large number of babies born globally at these gestational ages suggests that they are likely to have a large impact on hospital services, say the researchers.

Infections were the main cause of excess hospital admissions at all ages, but particularly during infancy. Respiratory and gastrointestinal conditions also accounted for a large proportion of admissions during the first two years of life.

This is an observational study, so can't establish cause, and the researchers point to some limitations, such as being unable to take account of several factors that can impact child health like maternal smoking and breastfeeding.

However, they say this was a large study using routinely collected data over a 10 year period, and the findings remained relatively stable after further analyses, suggesting that the results withstand scrutiny.

As such, the researchers say their findings indicate that gestational age at [birth](#) "is a strong predictor of childhood illness, with those born extremely preterm being at the greatest risk of hospital [admission](#) throughout childhood."

And the finding that infections were the main cause of excess [hospital](#) admissions at all ages prompt the researchers to call for targeted strategies to help prevent and better manage childhood infections.

Future research should also consider gestational age as a continuum and explore it for outcomes week by week, they conclude.

More information: Gestational age and hospital admissions during childhood: population based, record linkage study in England (TIGAR study), [DOI: 10.1136/bmj.m4075](https://doi.org/10.1136/bmj.m4075)

Provided by British Medical Journal

Citation: Early birth linked to greater risk of hospital visits during childhood (2020, November 25) retrieved 17 May 2024 from <https://medicalxpress.com/news/2020-11-early-birth-linked-greater-hospital.html>

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