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Understanding the effects of being SGA at birth

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Longitudinal neonatal outcome studies are becoming more exciting as we start to evaluate the trajectory of the well described sequelae of prematurity into the young adult effects of being born very preterm. In this issue of *BJOG*, Eves and colleagues use the Bavarian Longitudinal Study to evaluate the relative effects of being born small for gestational age (SGA) alongside important measures of social advantage and of parent infant relationship measures (*BJOG* 2020 xxxx). This is as it says – the effect of being small for dates at birth and not the effect of fetal growth restriction (FGR), an important distinction. The findings of this analysis are important in our understanding of the relative effect of commonly made perinatal measures and social factors.

Several studies following very preterm birth have now shown that cognitive scores remain pretty stable over childhood from early school age; measures made in childhood are likely to translate into similar results in early adult life. What Eves and colleagues elegantly describe is a narrowing of the gap after SGA birth, so that in adult life compared to other term or very preterm individuals, respectively, the cognitive

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deficit has reduced from over 8 points to 2-4 points compared to AGA individuals. The difference between very preterm and term births however remains similar and dwarfs this effect, as shown in their population to 26 years and in the UK EPICure population through to 19 years.(Linsell *et al* Arch Dis Child 2018;103:363-70) Thus childhood differences are unlikely to wash out and perinatal effects on childhood measures should persist.

What was also surprising from these data, relative to high SES at birth, were the large effects shown by middle SES at birth (9 points) and by low SES (14 points). Equally intriguing was the prediction from their judgement of poor parent-infant relationship, which was around 10 points. These large influences need to be placed in perspective relative to the effect of being SGA at birth. Often maternal educational level is substituted for SES and, interestingly, in the EPICure analysis this was a much smaller effect (3 points). Robust measures of SES and parenting are therefore important and put the relationship between perinatal events and important long term outcomes into context.

Longitudinal studies to middle childhood after FGR show similar findings to the those described above, implying similar findings. Given the nature of brain development after FGR, whether this gap closes awaits confirmation. Genetically small fetuses may be more resilient than those exposed to FGR. Studies evaluating long term outcomes for FGR, SGA and preterm populations need to collect measures of SES and parenting, as without them it is difficult to isolate the perinatal effect we are actually seeking. The importance of positive parenting and social advantage in offsetting some of the disadvantage of preterm birth has been known for some time but now, more than ever, we need methodologically strong explanatory studies to develop strategies to overcome these key influences.

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