

Vitamin D supplements in pregnancy do not improve infant bone health

Maternal vitamin D status has been associated with bone mass of offspring in many studies, however the MAVIDOS study, a randomised, double-blind, placebo-controlled trial of vitamin D supplements in pregnancy, suggests that vitamin D does not improve bone density in newborn infants.

Research published in *The Lancet Diabetes and Endocrinology* by Cyrus Cooper and colleagues, showed that 1,000 units of vitamin D taken every day from 14 week's gestation until delivery of the baby is highly effective at increasing vitamin D levels in the mother but does not affect neonatal bone mineral content. However, further analysis indicated vitamin D supplements might be beneficial for babies born in winter months, with the authors suggesting this could counteract the seasonal drop in levels that occur from lack of sunshine.

NICE guidelines recommend pregnant and breastfeeding women take vitamin D supplements, as well as infants and young children under five years of age. There are several other reasons for giving pregnant women vitamin D apart from the potential benefit to the babies' bones (eg the benefit to the mothers bones and prevention of neonatal convulsions). Results of the ongoing MAVIDOS childhood follow-up study are awaited.

Reference

Cooper C. et al. Maternal gestational vitamin D supplementation and offspring bone health (MAVIDOS): a multicentre, double-blind, randomised placebo-controlled trial. *Lancet Diabetes Endocrinol* 2016 doi: 10.1016/S2213-8587(16)00044-9 [Epub ahead of print].

Investigating the bonds between mother and infant

The link between a mother and her infant is profound, and ongoing research discussed at this year's Cambridge Science Festival (7-20 March 2016) suggested the extent of mother and baby brain interaction could be much deeper than originally thought.

During the event, researchers from the Baby-LINC (learning through interpersonal neural communication) laboratory at the University of Cambridge demonstrated the use of the latest wireless electroencephalography (EEG) brain imaging technology. By measuring brain activity in both mother and infant at the same time, their research is revealing how the electrical activity between two brains can become naturally synchronised during play, and how this synchronisation helps babies to learn.

Speaking about the ongoing study, researcher Dr Victoria Leong explained: "Mothers and infants appear to share a privileged bond. This is an implicit form of communication or empathy that is most clearly evidenced through 'behavioural synchrony' – a mirroring of postures, gestures and even mood between them.

"Usually, this connection has an adaptive role – it keeps the mother physically and emotionally close to her baby and thereby in tune with and responsive to their needs. However, this bi-directional connection can sometimes have unhappy consequences for the infant. For example, if a mother suffers from postnatal depression, she will tend to speak with a flattened tone that conveys sadness, and she will interact less with her baby. As a consequence, her infant will intuitively also start to vocalise less and express sadder emotional tone.

"If these infants are followed-up, their neural changes can sometimes persist and be associated with higher risk for emotional disturbances in later life."

Preliminary findings from Dr Leong's research reveal that brain synchrony is reduced when mothers are looking away (as if distracted) compared to when they are looking directly at their babies. The team has started to test whether mother-infant synchrony is higher than stranger-infant synchrony, and whether this has any consequences for learning language.



Concerns raised about transferring vaginal microbes to infants born by c-section

There is concern about a growing number of women requesting 'vaginal seeding' – the practice of exposing infants delivered by caesarean section to maternal vaginal microbiota. The process involves rubbing gauze that has been incubated in the mother's vagina over the newborn's face and body in the belief that exposure to the microbes may promote a healthy immune system so that the infant gains the same benefit against asthma and autoimmune conditions as those exposed to microbiota naturally through vaginal birth.

A recent pilot study, conducted by Dominguez-Bello et al and published in *Nature Medicine*,¹ showed that vaginal microbes can be partially restored at birth in c-section-delivered babies. However, the long-term health consequences remain undetermined.

A subsequent editorial in the *British Medical Journal*² warns

that vaginal seeding may put newborn infants at risk of infection. Cunningham et al highlight concerns that the practice is occurring without adequate professional awareness or guidelines and that there is a risk of transmitting infections that the mother may not be aware of, including herpes simplex virus, group B streptococcus, chlamydia and gonorrhoea. In their article, they advise staff not to carry out the procedure because there is no evidence of any health benefit but, if women wish to perform it themselves, they should be fully informed about the theoretical risks.

References

1. Dominguez-Bello M.G. et al. Partial restoration of the microbiota of cesarean-born infants via vaginal microbial transfer. *Nature Medicine* 2016;22:250-53.
2. Cunningham A.J. et al. Vaginal seeding of infants born by caesarean section. *Br Med J* 2016;352:i227.