

Lancet, 2006 Jan 7;367(9504):36-43.

Maternal vitamin D status during pregnancy and childhood bone mass at age 9 years: a longitudinal study.

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Source

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Erratum in

1 [Lancet](#). 2006 May 6;367(9521):1486.

Abstract

BACKGROUND:

Vitamin D insufficiency is common in women of childbearing age and increasing evidence suggests that the risk of osteoporotic fracture in adulthood could be determined partly by environmental factors during intrauterine and early postnatal life. We investigated the effect of **maternal vitamin D status** during **pregnancy** on **childhood** skeletal growth.

METHODS:

In a **longitudinal study**, we studied 198 children born in 1991-92 in a hospital in Southampton, UK; the body build, nutrition, and **vitamin D status** of their **mothers** had been characterised during **pregnancy**. The children were followed up at age **9 years** to relate these **maternal** characteristics to their body size and **bone mass**.

FINDINGS:

49 (31%) **mothers** had insufficient and 28 (18%) had deficient circulating concentrations of 25(OH)-**vitamin D** during late **pregnancy**. Reduced concentration of 25(OH)-**vitamin D** in **mothers** during late **pregnancy** was associated with reduced whole-body ($r=0.21$, $p=0.0088$) and lumbar-spine ($r=0.17$, $p=0.03$) **bone-mineral** content in children at age **9 years**. Both the estimated exposure to ultraviolet B radiation during late **pregnancy** and the **maternal** use of **vitamin D** supplements predicted **maternal** 25(OH)-**vitamin D** concentration ($p<0.0001$ and $p=0.0110$, respectively) and **childhood bone mass** ($p=0.0267$). Reduced concentration of umbilical-venous calcium also predicted reduced **childhood bone mass** ($p=0.0286$).

INTERPRETATION:

Maternal vitamin D insufficiency is common during **pregnancy** and is associated with reduced **bone-mineral** accrual in the offspring during **childhood**; this association is mediated partly through the concentration of umbilical venous calcium. **Vitamin D** supplementation of pregnant women, especially during winter months, could lead to longlasting reductions in the risk of osteoporotic fracture in their offspring.

Comment in

1 [Lancet](#). 2006 Apr 22;367(9519):1316; [author reply 1317](#).

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