

Abstract

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Vitamin D Supplementation in Early Childhood and Risk of Type 1 Diabetes: a Systematic Review and Meta-analysis.

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OBJECTIVES: To assess whether vitamin D supplementation in infancy reduces risk of type 1 diabetes in later life.

DESIGN: Systematic review and meta-analysis.

DATA SOURCES: Medline, Embase, Cinahl, Cochrane Central Register of Controlled Trials and reference lists of retrieved articles.

MAIN OUTCOME MEASURE: Development of type 1 diabetes. Inclusion criteria: Controlled trials and observational studies which had assessed the effect of vitamin D supplementation on risk of developing type 1 diabetes.

RESULTS: Five observational studies met the inclusion criteria; no randomised controlled trials were found. 4 of the 5 included studies were case control studies and the fifth study was a cohort study. Meta-analysis of data from the case control studies showed that the risk of type 1 diabetes was significantly reduced in infants who were supplemented with vitamin D compared to those who were not supplemented (pooled odds ratio 0.71, 95% CI 0.60 to 0.84). The result of the cohort study was in agreement with that of the meta-analysis. There was also some evidence of a dose-response effect, with those using higher amounts of vitamin D being at lower risk of developing type 1 diabetes. Finally, there was a suggestion that the timing of supplementation might also be important for the subsequent development of type 1 diabetes.

CONCLUSION: Vitamin D supplementation in early childhood may offer protection against the development of type 1 diabetes. The evidence for this is based on observational studies.

Adequately powered, randomised controlled trials with long periods of follow-up are needed to establish causality and the best formulation, dose, duration and period of supplementation.

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