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Vitamin D deficiency does not increase TB risk in young children - study

Low vitamin D levels have been hypothesised by some experts to be a risk factor for Tuberculosis (TB). People who develop TB often present with low vitamin D levels when they are diagnosed. However, whether vitamin D levels at one time point predispose a child to developing TB is debated and not clear.

No previous studies have looked at this question in infants, a high-risk group for both TB and vitamin D deficiency. This prompted University of Cape Town (UCT) and Boston University researchers to conduct a study to understand whether vitamin D is linked to subsequent TB in young children.

Published in the [*Clinical Infectious Diseases*](#) journal, the study looked at 774 infants in the Drakenstein Child Health Study cohort who had a vitamin D measurement between six and 10 weeks of age. Vitamin D levels were extraordinarily low with 81% of infants in the cohort defined as vitamin D deficient.

The researchers followed children for TB from birth for around seven years of age. They found a very high incidence of TB disease, amongst the highest ever reported globally. To see whether vitamin D deficiency may be associated with this high burden of disease, measurements for vitamin D were done on stored samples from infants obtained at six to 10 weeks of age.

"We found a very high prevalence of vitamin D deficiency in infants. Surprisingly though, we found no relationship between vitamin D levels in early infancy and TB incidence during childhood regardless of the vitamin D cut off used," said co-author Professor Heather Zar, chair of the [Department of Paediatrics and Child Health](#) and director of the South African Medical Research Council Unit on Child and Adolescent Health at UCT.

"This was true when we used the entire follow-up time period (seven years) or when we only looked at children up to one year of age. Although we did not show a relationship, this is an important finding as it suggests that vitamin D supplementation may not be useful to prevent TB in this setting and with this population. Therefore, other interventions or relationships should be investigated further instead and we may need to reconsider regarding vitamin D and TB risk."

However, children with the lowest vitamin D levels in early infancy were more likely to convert their tuberculin skin test in the first two years of life. “We also found high incidence of TB in this cohort,” she added.

“In settings with hyperendemic TB disease and where vitamin D deficiency is ubiquitous, such as South Africa, vitamin D concentrations in infancy may not predict subsequent tuberculosis disease in childhood.”

Leonardo Martinez, lead author and assistant professor at Boston University, said: “TB is a major cause of death and of illness in children – both within South Africa and more globally. Therefore, understanding factors that put young children at high-risk of TB is important to create interventions for this group.”

“We would like to conduct further research on other vitamins and their relationship to TB. Although vitamin D did not predict incident TB in our cohort, we hypothesise that other vitamins, such as vitamin A, B, or C (or others), may be linked to TB. Therefore, we plan to look at these specific micronutrients in more-depth. Also, we’d like to look at vitamin D levels through childhood, to see whether levels measured later may be associated with TB or other diseases,” he said.

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