Medical Xpress

Vitamin D improves weight gain and brain development in malnourished children

May 1 2018

Study participants in Pakistan. Credit: University of the Punjab

High dose vitamin D supplements improve weight gain and the

development of language and motor skills in malnourished children, according to a study led by University of the Punjab, Pakistan, and Queen Mary University of London.

Vitamin D—the 'sunshine vitamin'—is well known for its beneficial effects on bone and muscle health, and a study by Queen Mary researchers last year found that it could also protect against colds and flu. Now new research from the team is revealing further benefits.

Lead author Dr. Javeria Saleem from University of the Punjab and Queen Mary University of London said: "High-dose vitamin D significantly boosted weight gain in malnourished children. This could be a game-changer in the management of severe acute malnutrition, which affects 20 million children worldwide."

Senior author Professor Adrian Martineau from Queen Mary University of London added: "This is the first clinical trial in humans to show that vitamin D can affect brain development, lending weight to the idea that vitamin D has important effects on the central nervous system.

"Further trials in other settings are now needed to see whether our findings can be reproduced elsewhere. We are also planning a larger trial in Pakistan to investigate whether high-dose vitamin D could reduce mortality in children with severe malnutrition."

Study participants in Pakistan. Credit: University of the Punjab

The study, published in *The American Journal of Clinical Nutrition*, took place in Pakistan, where an estimated 1.4 million children live with severe acute malnutrition and are at increased risk of long-term effects on their physical and mental health.

High energy food sachets are the standard treatment for the condition, but they contain relatively modest amounts of vitamin D.

In the study, 185 severely malnourished children aged 6-58 months were treated with an eight-week course of high energy food sachets, and were also randomised to either receive additional high-dose vitamin D (two doses of 200,000 international units / 5 milligrams, given by mouth) or placebo.

After eight weeks, vitamin D supplementation led to clinically

significant improvements in weight (on average gaining an extra 0.26 kg compared to the control group).

Study participants in Pakistan. Credit: University of the Punjab

Vitamin D supplementation also resulted in substantial reductions in the proportion of children with delayed motor development, delayed language development and delayed global development (reaching certain milestones such as learning to walk or talk).

Senior author Dr. Rubeena Zakar from University of the Punjab added: "Our findings could be a great help to the Health Ministry of Pakistan in dealing with the issue of malnutrition."

The study was funded by the Higher Education Commission of Pakistan.

The researchers say their study has some limitations including that it did not look at varying the dose of vitamin D to see if a lower dose would have been sufficient to boost weight gain and brain development. While they saw no overt adverse reactions, the possibility of side effects arising with clinical use of this high dose of vitamin D cannot be excluded.

More information: High-dose vitamin D3 in the treatment of severe acute malnutrition: a multi-center double-blind randomized controlled trial, *The American Journal of Clinical Nutrition* (2018). DOI: 10.1093/ajcn/nqy027

Provided by Queen Mary, University of London

(2018, May 1) retrieved 23 April 2024 from https://medicalxpress.com/news/2018-05-vitamin-d-weight-gain-brain.html

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