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The impact of vitamin D fortification of staple food for children: A systematic review and meta-analysis

Nora Al Helali
King Saudi University, Saudi Arabia

Aim: Vitamin D deficiency is a public health problem. We aimed to assess the effectiveness of vitamin D fortification of staple food for improving vitamin D level in children.

Methods: We performed a systematic review and meta-analysis of Randomized Controlled Trials (RCTs) evaluating the use of vitamin D fortified food products compared to no fortification in healthy children aged 0-18 years. The primary outcomes are vitamin D level and vitamin D deficiency prevalence. The secondary outcomes are school performance and infection rate. It was screened for titles and abstracts, assessed full text for eligibility and performed data extraction. We performed meta-analysis using random effects model and reported effect estimates with 95% confidence interval.

Results: We identified 2224 articles and screened 1776 after removing duplicates. 86 articles were assessed eligible for full text assessment and 17 RCTs were included for data extraction with 3157 patients. The RCT's were performed in ten different countries. The interventions included fortification of milk, juice, bread and yogurt compared to no fortification. Vitamin D fortification improved the vitamin D level by MD 17 nmol\L (95%CI 5.32, 28.67) and reduced vitamin D deficiency prevalence by relative risk (RR) of 0.61 (95%CI 0.49-0.76). Vitamin D level improved more in lower middle income countries MD 25.66 nmol/l ((95%CI 24.71, 26.61) and when used in school based programs MD 31.20 (95%CI 30.20, 32.21) compared to clinic based programs MD 16.07 (95%CI 11.63, 20.50).

Conclusion: Our systematic review is the first to assess the impact of fortification of staple food on vitamin D status for children. Vitamin D fortification is an effective way to reduce vitamin D deficiency prevalence specially in low middle income countries and school-based programs.

Biography

Nora Al Helali is currently in her fifth year as a medical student. She is working on several papers and very passionate about research.

n.k.alhelali@gmail.com

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