

[< Previous Article](#)

April 2016 Volume 137, Issue 4, Pages 1063–1070.e2

[Next Article >](#)

Access this article on
[ScienceDirect](#)

Prenatal, perinatal, and childhood vitamin D exposure and their association with childhood allergic rhinitis and allergic sensitization

[Supinda Bunyavanich](#), MD, MPH, [Sheryl L. Rifas-Shiman](#), MPH, [Thomas A. Platts-Mills](#), MD, [Lisa Workman](#), BA, [Joanne E. Sordillo](#), ScD, [Carlos A. Camargo Jr.](#), MD, DrPH, [Matthew W. Gillman](#), MD, SM, [Diane R. Gold](#), MD, MPH, [Augusto A. Litonjua](#), MD, MPH

Altmetric 324

DOI: <http://dx.doi.org/10.1016/j.jaci.2015.11.031> | [CrossMark](#)

[Article Info](#)

[Abstract](#) | [Full Text](#) | [Images](#) | [References](#)

Background

The role of early-life vitamin D in childhood allergy is controversial.

Objective

We sought to assess vitamin D exposure in early life by multiple modalities and ascertain its association with childhood allergic rhinitis and allergic sensitization.

Methods

One thousand two hundred forty-eight mother-child pairs from a US prebirth cohort unselected for any disease were studied. Vitamin D exposure was assessed by measures of maternal intake during the first and second trimesters of pregnancy and serum 25-hydroxyvitamin D (25[OH]D) levels in mothers during pregnancy, cord blood, and children at school age (median age, 7.7 years; interquartile range, 1.0 years). Tests for associations between vitamin D exposure with ever allergic rhinitis, serum total IgE level, and allergen sensitization at school age were conducted.

Results

The correlations between maternal intake of vitamin D during pregnancy and serum 25(OH)D levels in pregnant mothers, cord blood, and children at school age were weak to moderate ($r = -0.03$ to 0.53). Each 100 IU/d of food-based vitamin D intake during the first and second trimesters (equivalent to the amount of vitamin D in an 8-ounce serving of milk) was associated with 21% and 20% reduced odds of ever allergic rhinitis at school age (odds ratios of 0.79 [95% CI, 0.67-0.92] and 0.80 [95% CI, 0.68-0.93]), respectively. There were no associations between maternal supplemental vitamin D intake or serum 25(OH)D levels at any time point with ever allergic rhinitis. There were no associations between any vitamin D exposure and serum total IgE level or allergen sensitization at school age.

Conclusions

Inclusion of foods containing vitamin D in maternal diets during pregnancy may have beneficial effects on childhood allergic rhinitis.

Key words:

[Allergic rhinitis](#), [vitamin D](#), [atopy](#), [prenatal](#), [perinatal](#), [childhood](#), [sensitization](#), [food](#), [supplement](#), [allergy](#)

Abbreviations used:

[FFQ](#) (Food frequency questionnaire), [25\(OH\)D](#) (25-Hydroxyvitamin D), [OR](#) (Odds ratio)

Article Tools

[PDF \(1 MB\)](#)

[Download Images\(.ppt\)](#)

[About Images & Usage](#)

[Email Article](#)

[Add to My Reading List](#)

[Export Citation](#)

[Create Citation Alert](#)

[Cited by in Scopus \(1\)](#)

[Request Permissions](#)

[Order Reprints](#)

(100 minimum order)

Related Articles

Vitamin D₃ therapy in patients with asthma complicated by sinonasal disease: Secondary analysis of the Vitamin D Add-on Therapy Enhances Corticosteroid Responsiveness in Asthma trial

Publication stage: In Press Corrected Proof
Journal of Allergy and Clinical Immunology

Vitamin D3 treatment of vitamin D-insufficient asthmatic patients does not alter immune cell function

Publication stage: In Press Corrected Proof
Journal of Allergy and Clinical Immunology

Cord blood vitamin D concentrations are unrelated to atopy and wheeze in 2 diverse birth cohort studies

Journal of Allergy and Clinical Immunology,
Vol. 136, Issue 4

Vitamin D reduces eosinophilic airway inflammation in nonatopic asthma: Are we sure?

Journal of Allergy and Clinical Immunology,
Vol. 136, Issue 2

Vitamin D in allergic disease: Shedding light on a complex problem

Journal of Allergy and Clinical Immunology,
Vol. 131, Issue 2

[View All](#)

To access this article, please choose from the options below

Log In

Email/Username:

Password:

Remember me

[Forgot password?](#)

Register

[Create a new account](#)

Purchase access to this article

- [\\$31.50 USD|Online access for 24 hours](#)

Claim Access

If you are a current subscriber with Society Membership or an Account Number, [claim your access now](#).

Subscribe to this title

[Purchase a subscription](#) to gain access to this and all other articles in this journal.

Institutional Access

[Visit ScienceDirect](#) to see if you have access via your institution.

Supported by the National Institutes of Health (AI093538 , AI118833 , HL61907 , HL64925 , HD34568 , AI35786 , HL68041 , and HL007427).

Disclosure of potential conflict of interest: S. Bunyavanich, S. L. Rifas-Shiman, and J. E. Sordillo have received grants from the National Institutes of Health (NIH). T. A. Platts-Mills has received a grant from the National Institute of Allergy and Infectious Diseases. M. W. Gillman has received grants from the NIH (R01 HL061907, R37 HD 34568, R01 HL064925, and K24 HL 68041) and has received royalties from Cambridge University Press and UpToDate. D. R. Gold has received grants and travel support from the NIH. A. A. Litonjua has received a grant from the NIH and has received royalties from UpToDate and Springer Humana Press. The rest of the authors declare that they have no relevant conflicts of interest.

© 2016 American Academy of Allergy, Asthma & Immunology. Published by Elsevier Inc. All rights reserved.

[< Previous Article](#)

April 2016 Volume 137, Issue 4, Pages 1063–1070.e2

[Next Article >](#)

Copyright © 2016 [Elsevier](#) Inc. All rights reserved. | [Privacy Policy](#) | [Terms & Conditions](#) | [Use of Cookies](#) | [About Us](#) | [Help & Contact](#)
The content on this site is intended for health professionals.

Advertisements on this site do not constitute a guarantee or endorsement by the journal, Association, or publisher of the quality or value of such product or of the claims made for it by its manufacturer.