INPLASY

Vitamin D Deficiency and Hashimoto's Thyroiditis: A Scoping Review

INPLASY2026110006
doi: 10.37766/inplasy2026.11.0006
Received: 2 November 2026
Published: 2 November 2026

Vargas-Uricoechea, H; Vargas-Sierra, H; Castellanos-Pinedo, A; Devoz-Muñoz, J.

Corresponding author:
Hernando Vargas-Uricoechea

hernandovargas@unicauca.edu.co

Author Affiliation:
Metabolic Diseases Study Group, Department of Internal Medicine; Universidad del Cauca, Popayán, Colombia.

ADMINISTRATIVE INFORMATION

Support - None declared.

Review stage at the time of initial registration - Other - analysis and writing of the manuscript.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2026110006

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 2 November 2026 and was last updated on 2 November 2026.

INTRODUCTION

Review question / Objective Review question: Among adults and adolescents with HT or AITD (Population), what is the nature and extent of evidence relating serum vitamin D status to thyroid autoimmunity, thyroid function, and the effects of vitamin D supplementation (Concept), across observational and interventional study designs and clinical settings worldwide (Context)?
Objective. To chart the extent, nature, and distribution of evidence on the relationship between vitamin D status and HT, including supplementation trials, without restricting inclusion to studies amenable to quantitative pooling.

Background Vitamin D deficiency has been proposed as a modifiable environmental contributor to autoimmune thyroid disease, but the breadth and consistency of evidence linking vitamin D status to Hashimoto's thyroiditis (HT) have not been systematically mappede declared.

Rationale Vitamin D deficiency has been proposed as a modifiable environmental contributor to autoimmune thyroid disease, but the breadth and consistency of the evidence linking vitamin D status to HT have not been systematically mapped. This scoping review is a methodological conversion and extension of a prior systematic review with quantitative synthesis conducted by the same authors on the same topic (355 records screened, 21 studies included); the eligibility criteria, search strategy, and evidence base were deliberately broadened here, and the formal risk-of-bias/critical-appraisal scoring and meta-analysis of the earlier review were not repeated, consistent with scoping-review methodology, in order to chart a broader and more complete evidence landscape — including large or well-controlled studies reporting null or counter-directional findings that a narrower quantitative synthesis would not weigh alongside the predominant pattern.

Vargas-Uricoechea et al. INPLASY protocol 2026110006. doi:10.37766/inplasy2026.11.0006 Downloaded from https://inplasy.com/inplasy-2026-11-0006/

METHODS

Strategy of data synthesis This scoping review was conducted in accordance with PRISMA-ScR and the Joanna Briggs Institute (JBI) methodology for scoping reviews. A literature search was performed across six electronic databases: PubMed/MEDLINE, Web of Science, Scopus, ScienceDirect, SpringerLink, and Google Scholar, combining the PCC elements: ("Vitamin D deficiency" OR "vitamin D insufficiency" OR "25-hydroxyvitamin D" OR "25(OH)D") AND ("Hashimoto's thyroiditis" OR "Hashimoto thyroiditis" OR "autoimmune thyroiditis" OR "chronic lymphocytic thyroiditis" OR "autoimmune thyroid disease"), for records published January 1996-August 2026, in English. The search built on a preceding systematic review by the same authors and was expanded in two respects: a renewed database search for primary studies not previously captured, cross-checked against a library of previously identified but uncited full-text articles; and a parallel, non-charted search for previously published systematic reviews, meta-analyses, and narrative reviews on vitamin D and autoimmune thyroid disease, used for comparative discussion. The expanded search identified seven additional eligible primary studies, ten eligible systematic reviews/meta-analyses, and four eligible narrative reviews.

Eligibility criteria Included: peer-reviewed, English-language publications (January 1996-August 2026) reporting a serum 25(OH)D measurement related to HT, or an AITD study with a distinguishable HT-specific analysis. Excluded: sources addressing Graves' disease exclusively without a distinguishable HT-specific analysis; vitamin D status assessed solely through dietary questionnaires without a serum measurement; animal or in-vitro studies; case reports or case series with fewer than ten participants; conference abstracts without retrievable full text; and narrative reviews, editorials, or commentaries presenting no original data. Unlike the preceding systematic review, sources were not excluded on the basis of a formal risk-of-bias assessment, reporting of only median (rather than mean) vitamin D values, or lack of a healthy comparator group.

Source of evidence screening and selection A standardized charting form was used to extract, for each included source of evidence: author and year; country; study design; population and sample size (case/control or treatment/comparator, as applicable); method and timing of vitamin D assessment; baseline vitamin D status; comparator; outcomes assessed (HT/AITD diagnosis or prevalence, thyroid autoantibody titers, thyroid function parameters, or intervention-related change in any of these); and the key reported finding, including its direction (inverse, null, or counter-directional) relative to the hypothesis that lower vitamin D is associated with HT or improves with supplementation. Charting was performed by one reviewer and verified by a second; discrepancies were resolved by consulting the original source.

Data management Two reviewers (H.V.-U. and H.V.-S.) independently screened titles/abstracts and full texts against the PCC-based eligibility criteria, resolving disagreements by discussion or, where necessary, consultation with a third reviewer (A.C.-P.). A standardized charting form was used to extract, for each included source: author and year, country, study design, population and sample size, method and timing of vitamin D assessment, baseline vitamin D status, comparator, outcomes assessed, and the key reported finding, including its direction (inverse, null, or counter-directional). Charting was performed by one reviewer and verified by a second; discrepancies were resolved by consulting the original source.

Reporting results / Analysis of the evidence Twenty-eight primary studies met eligibility (22 observational, 6 interventional) across fourteen countries, versus 21 in the preceding systematic review. Most observational studies reported lower 25(OH)D and/or higher deficiency prevalence in HT/AITD than controls, with inverse correlations between 25(OH)D and autoantibody titers; three large or well-controlled studies found no clinically meaningful association. Across all 28 charted sources, 21 (75%) reported an inverse association, 4 (14%) a null association, 1 (4%) a counter-directional finding, and 2 (7%) mixed or outcome-dependent findings.

Presentation of the results Interventional evidence (6 trials) was mixed: most, but not all, trials reported a significant reduction in thyroid autoantibody titers with vitamin D supplementation, while effects on thyroid function and metabolic parameters were inconsistent. Ten previously published systematic reviews/meta-analyses and four narrative reviews were mapped separately for comparative context, including a contrast with Graves' disease, for which the inverse association was less consistent than for HT.

Language restriction English.

Country(ies) involved Colombia, Argentina.

Vargas-Uricoechea et al. INPLASY protocol 2026110006. doi:10.37766/inplasy2026.11.0006 Downloaded from https://inplasy.com/inplasy-2026-11-0006/

Keywords Vitamin D; Hashimoto's thyroiditis; autoimmune thyroid disease; scoping review; thyroid autoimmunity; 25-hydroxyvitamin D.

Dissemination plans Publication in a peer-reviewed journal.

Contributions of each author

Author 1 - Hernando Vargas-Uricoechea - Conceptualization, methodology, investigation, data curation, formal analysis, writing (original draft preparation), writing (review and editing), supervision.
Email: hernandovargas@unicauca.edu.co
Author 2 - Hernando Vargas-Sierra - Investigation, data curation, writing (review and editing).
Email: hdvargas@unicauca.edu.co
Author 3 - Alejandro Castellanos-Pinedo - Investigation, data curation, writing (review and editing).
Email: acaspinedo@yahoo.es
Author 4 - Julia Devoz-Muñoz - Investigation, data curation, writing (review and editing).
Email: julia.devoz123@gmail.com

Vargas-Uricoechea et al. INPLASY protocol 2026110006. doi:10.37766/inplasy2026.11.0006 Downloaded from https://inplasy.com/inplasy-2026-11-0006/