

INPLASY PROTOCOL

To cite: Su et al. Association of vitamin A supplementation with allergic diseases: A meta-analysis of randomized controlled trials. Inplasy protocol 202240032. doi: 10.37766/inplasy2022.4.0032

Received: 06 April 2022

Published: 06 April 2022

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Support: None.

**Review Stage at time of this
submission:** Data analysis -
Completed but not published.

Conflicts of interest:
None declared.

Association of vitamin A supplementation with allergic diseases: A meta-analysis of randomized controlled trials

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Review question / Objective: Previous studies have explored the association of vitamin A supplementation with allergic diseases; however, the results remain inconclusive. We aimed to assess the above-mentioned association.

Information sources: We searched the randomized controlled trials published by PubMed, Web of Science, Embase, and China National Knowledge Infrastructure up to Nov 15, 2021, using the following search terms: (1) Vitamin A; (2) allergy; (3) wheeze; (4) atopy. The search strategy involves medical subject headings (mesh) and text words combined by the Boolean operator "and".

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 06 April 2022 and was last updated on 06 April 2022 (registration number INPLASY202240032).

INTRODUCTION

Review question / Objective: Previous studies have explored the association of vitamin A supplementation with allergic diseases; however, the results remain inconclusive. We aimed to assess the above-mentioned association.

Condition being studied: PubMed, Embase, Web of science, and China National Knowledge Infrastructure were retrieved for association between vitamin A supplementation and allergic diseases with randomized controlled trials (RCTs) until Nov 15, 2021. Stata 12.0 was used for

meta-analysis, sensitivity analysis and bias analysis.

METHODS

Participant or population: Patients with allergic diseases.

Intervention: Vitamin A.

Comparator: Placebo.

Study designs to be included: randomized controlled trials.

Eligibility criteria: (1) study design was double-blind, randomized, placebo-controlled trials; (2) the intervention was vitamin A or placebo; (3) the outcome was allergic diseases; (4) the full text is available for reference.

Information sources: We searched the randomized controlled trials published by PubMed, Web of Science, Embase, and China National Knowledge Infrastructure up to Nov 15, 2021, using the following search terms: (1) Vitamin A; (2) allergy; (3) wheeze; (4) atopy. The search strategy involves medical subject headings (mesh) and text words combined by the Boolean operator "and".

Main outcome(s): In comparison to placebo, vitamin A supplementation was associated with increased risk of girls' atopy (RR = 1.70, 95% confidence interval [1.20, 2.41], P = 0.171, I²= 43.4% fixed effect model) and the frequency of delayed atopy among adults (MD=0.46, 95% CI=0.04-0.88); however, no significant association was found for the association of vitamin A supplementation with wheeze for children (RR = 1.40, 95% CI [0.49, 3.98], P = 0.018, I²= 82.1% random effect model).

Quality assessment / Risk of bias analysis: From the results of sensitivity and publication bias, we found that these results were robust with little publication bias.

Strategy of data synthesis: The effect size was pooled by using random or fixed effect

models according to the heterogeneity. Heterogeneity of effect size across studies was tested by I² statistics (I² > 50% is considered significant). The random effect model was used for analysis if P < 0.05 or I² > 50%, or else fixed effect model was used to conduct the analysis. Visual examination of the funnel plot was used to assess publication bias. Sensitivity analysis was explored by deleting one study in turn to observe the impact of individual results on the overall analysis. The study was conducted by using STATA version 12.0. All P values are two tailed, and we set P < 0.05 as the threshold for significance.

Subgroup analysis: No subgroup analysis was conducted.

Sensitivity analysis: Sensitivity analysis was used to explore the potential sources of heterogeneity. Excluding a single study in turn and it did not alter the combined RR significantly.

Country(ies) involved: China.

Keywords: Vitamin A; allergy; wheeze.

Contributions of each author:

Author 1 - Jingqiu Su.

Author 2 - Hua Pan.