INPLASY PROTOCOL

To cite: Shi et al. Effects of Vitamin D Supplementation on Serum Lipid Profile in Women with Polycystic Ovary Syndrome: A protocol for a systematic review and Meta-analysis. Inplasy protocol 202050007. doi: 10.37766/inplasy2020.5.0007

Received: 02 May 2020

Published: 02 May 2020

Corresponding author:
Qiu Chen

zyydxnfm@163.com

Author Affiliation:
Hospital of Chengdu University of TCM

Support: **Yea**

Review Stage at time of this submission: **Piloting of the study selection process.**

Conflicts of interest:
None.

Effects of Vitamin D Supplementation on Serum Lipid Profile in Women with Polycystic Ovary Syndrome: A protocol for a systematic review and Meta-analysis

Shi, X[1]; Yao, J[2]; Fan, S[3]; Chen, Q[4].

Review question / Objective: **Does vitamin D supplementation have beneficial effects on lipid profile Among Women with Polycystic Ovary Syndrome? Does the duration or doses of vitamin D supplementation influence the outcomes?**
Condition being studied: **Polycystic ovary syndrome (PCOS) is the commonest endocrine disorder affecting 5–20% of reproductive-aged women, and the majority cases of anovulatory infertility and of hirsutism. Among PCOS-related metabolism dysfunction, dyslipidemia is certainly the highly prevalent. According to the National Cholesterol Education Program (NCEP) guidelines, as many as 70% of women with PCOS exhibit abnormal serum lipid concentrations. Beyond the skeletal effects, the role of vitamin D in the regulation of lipid metabolism has recently come into notice. However, the results are conflicting: with some studies demonstrating the positive effects on circulating lipid concentrations, while others showing no beneficial effects. Given that available published randomized clinical trials (RCTs) have a amount of uncertainty regarding the effect of vitamin D supplementation on serum lipid profile and considering the point that these studies are limited in sample size, a meta-analysis would be appropriate to resolve the current controversy and reach a conclusive result for the effect of vitamin D supplementation on serum lipid profile.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 02 May 2020 and was last updated on 02 May 2020 (registration number INPLASY202050007).

INTRODUCTION

Review question / Objective: **Does vitamin D supplementation have beneficial effects on lipid profile Among Women with Polycystic Ovary Syndrome? Does the duration or doses of vitamin D supplementation influence the outcomes?**

Condition being studied: Polycystic ovary syndrome (PCOS) is the commonest endocrine disorder affecting 5–20% of reproductive-aged women, and the majority cases of anovulatory infertility and of hirsutism. Among PCOS-related metabolism dysfunction, dyslipidemia is certainly the highly prevalent. According to the National Cholesterol Education Program (NCEP) guidelines, as many as 70% of women with PCOS exhibit abnormal serum lipid concentrations. Beyond the skeletal effects, the role of vitamin D in the regulation of lipid metabolism has recently come into notice. However, the results are conflicting: with some studies demonstrating the positive effects on circulating lipid concentrations, while others showing no beneficial effects. Given that available published randomized clinical trials (RCTs) have a amount of uncertainty regarding the effect of vitamin D supplementation on serum lipid profile and considering the point that these studies are limited in sample size, a meta-analysis would be appropriate to resolve the current controversy and reach a conclusive result for the effect of vitamin D supplementation on serum lipid profile.

METHODS

Participant or population: Patients with Polycystic ovary syndrome (PCOS).

Intervention: Vitamin D.

Comparator: Placebo.

Study designs to be included: Clinincal randomized clinical trials (RCTs).

Eligibility criteria: The study only selects RCTs of vitamin D supplementation for women with PCOS published in English. However cohort study, case-control study, ecologic studies, case reports, case series and non-RCTs are excluded.

Information sources: We will search five databases for relative studies: Medline, the Cochrane Library, EMBASE, Web of science, and ClinicalTrials.gov and identified all reports of randomized controlled trials (RCTs) published prior to July 2020. And the main key search words were: "vitamin D" OR "cholecalciferol" OR "25-hydroxyvitamin D2" OR "24,25-dihydroxyvitamin D3" AND "polycystic ovary syndrome" OR "PCOS". The ClinicalTrials.gov registry was also searched for unpublished trials and the authors were contacted for any additional information if necessary. Relevant references from included studies were sought to retrieve additional eligible studies.

Main outcome(s): The primary outcomes include the improvement in Lipid profile: Triglycerides, Cholesterol, LDL-C, VLDL-C, and HDL-C.

Quality assessment / Risk of bias analysis: Based on the Cochrane Handbook for Systematic Reviews (version 5.3.0), we will assess the methodological quality of all studies. The risks of bias are classified as low, unclear, or high by evaluating the 7 components as random sequence generation, allocation concealment, blinding of outcome assessment, blinding of participants and personnel, incomplete outcome data, selective outcome reporting, and other bias.

Strategy of data synthesis: We will calculate the weighted mean difference (WMD) and 95% confidence intervals (CI) of all outcomes (TC, TG, LDL, HDL, VLDL). Study heterogeneity will be tested by $\chi 2$-based Cochran Q statistic (P values < 0.10 indicates statistically significant heterogeneity) and I2 statistic. According to the Cochrane Handbook for Systematic Reviews, four thresholds for the interpretation of I2 were employed: 0% to 40% suggesting minor or none heterogeneity, 30% to 60% representing moderate heterogeneity, 50% to 90% indicating substantial heterogeneity and 75% to 100% meaning considerable heterogeneity. The random-effects model (inverse variance method) of analysis will be used to pool the estimations of WMD across studies if moderate or considerable heterogeneity was detected. In other cases, the fixed-effects model (inverse

variance method) will be employed. Statistical analyses will be carried out using Review Manager version 5.3, and P-values <0.05 will be considered to be statistically significant.

Subgroup analysis: If the results of the study are heterogeneous, subgroup analyses will be performed based on vitamin D doses, intervention duration, and type of supplementation.

Sensibility analysis: We will remove the included studies one by one to evaluate the reliability of the results of meta-analysis for a sensitivity analysis.

Language: English.

Country(ies) involved: China.

Keywords: vitamin D supplementation; polycystic ovary syndrome; serum lipid profile; meta-analysis.

Contributions of each author:
Author 1 - Xiaoyan Shi.
Author 2 - Jia Yao.
Author 3 - Simin Fan.
Author 4 - Qiu Chen.