

INPLASY PROTOCOL

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Effects of vitamin D or zinc supplementation on depression in overweight and obese subjects: a protocol of meta-analysis and systematic review

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Review question / Objective: Does vitamin D or zinc supplementation have any influence on depression in overweight and obesity subjects?

Condition being studied: Today, depression is highly prevalent in subjects with overweight and obesity. Previous observational studies have revealed that circulating 25-hydroxy vitamin D and zinc status have impact on the depressive symptoms. However, it remains debatable whether vitamin D or zinc supplementation can improve the depression disorders among the overweight and obese individuals. Therefore, we conduct this meta-analysis to investigate potential beneficial nutrients.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 April 2020 and was last updated on 28 April 2020 (registration number INPLASY202040202).

INTRODUCTION

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whether vitamin D or zinc supplementation can improve the depression disorders among the overweight and obese individuals. Therefore, we conduct this meta-analysis to investigate potential beneficial nutrients.

METHODS

Search strategy: #1 "Overweight"[Mesh]; #2 "Obesity"[Mesh]; #3 "obese"[Title/Abstract]; #4 obesity[Title/Abstract]; #5 overweight[Title/Abstract]; #6 #1 OR #2 OR #3 OR #4 OR #5; #7 "Depression"[Mesh]; #8 "Depressive Disorder"[Mesh]; #9 depressive[Title/Abstract]; #10 depression*[Title/Abstract]; #11 #7 OR #8 OR #9 OR #10; #12 "Vitamin D"[Mesh]; #13 "Vitamin D Deficiency"[Mesh]; #14 vitamin D[Title/Abstract]; #15 25-hydroxy vitamin D[Title/Abstract]; #16 25(OH)D[Title/Abstract]; #17 1,25-dihydroxy vitamin D[Title/Abstract]; #18 1,25(OH)2D[Title/Abstract]; #19 calcidiol[Title/Abstract]; #20 calcitriol[Title/Abstract]; #21 vitamin D deficienc*[Title/Abstract]; #22 #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21; #23 "Zinc"[Mesh]; #24 zinc[Title/Abstract]; #25 #23 OR #24; #25 randomized controlled trial [publication type]; #26 controlled clinical trial [publication type]; #27 randomized [Title/Abstract]; #28 placebo [Title/Abstract]; #29 clinical trials as topic [Mesh: noexp]; #30 randomly [Title/Abstract]; #31 trial [title]; #32 #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31; #33 animals [Mesh] NOT humans [Mesh]; #34 #32 NOT #33; For Vitamin D #35 #6 AND #11 AND #22 AND #34; For Zinc #36 #6 AND #11 AND #25 AND #34.

Participant or population: Subjects with overweight or obesity.

Intervention: Vitamin D or zinc supplementation.

Comparator: Placebo supplementation.

Study designs to be included: Clinical randomized controlled trials (RCTs).

Eligibility criteria: The clinical randomized controlled trials in overweight or obese subjects who received vitamin D or zinc supplementation evaluated depressive symptoms will be included in this meta-analysis. Nevertheless, we will exclude reviews, case reports, non-randomized trials and animal experiments.

Information sources: We will search PubMed, Embase and Cochrane Library databases from establishment to April, 2020. The following MeSH terms and free words will be utilized to construct this search strategy: overweight, obesity, obese, depression*, depressive, vitamin D, 25-hydroxy vitamin D, 1,25-dihydroxy vitamin D, calcidiol, calcitriol and zinc. If we cannot extract data from the trials, we will try our best to contact the corresponding authors. Meanwhile, we will retrieve other online databases for grey literatures.

Main outcome(s): 1. Scores of Beck Depression Inventory questionnaire; 2. Serum BDNF status; 3. Serum vitamin D or zinc level.

Quality assessment / Risk of bias analysis: Risk of bias will be assessed by the tool of quality assessment provided by the Cochrane Handbook. Two authors (YH, YJ) will independently appraise the eligible trials. The discrepancies will get a consistent conclusion by discussing with the third author (GS).

Strategy of data synthesis: Stata v.15.1.614 software and RevMan v.5.3 will be used for statistical analysis. We will describe our pooled data by the mean difference or standardized mean difference and 95% confidence intervals. When the I² statistic is lower than 50%, a fixed-effects model will be used. Otherwise, we will employ a random-effects model when I² statistic is higher than 50% with P value lower than 0.05. The results of the summarized effects will be diagrammed by a forest plot.

Subgroup analysis: Subgroup analysis and meta-regression will be conducted to explore the possible resources of heterogeneity such as: age, body mass

index, gender, dosage of treatment and some other potential aspects.

Sensibility analysis: Sensitivity analysis is mainly used to evaluate the robustness of the primary outcome measures. The method is that removing the low-level quality study one by one and then merge the data to assess the impact of sample size, study quality, statistical method, and missing data on results of meta-analysis.

Language: English.

Country(ies) involved: China.

Keywords: overweight, obesity, vitamin D, zinc, depression.

Contributions of each author:

Author 1 - Yilin Hou - Yilin Hou conceived and designed this meta-analysis and systematic review and drafted this protocol. Additionally, Yilin Hou will conduct the data extraction and quality assessment.

Author 2 - Yuxin Jin - Yuxin Jin will perform the data extraction and quality assessment independently with Yilin Hou.

Author 3 - Guangyao Song - Guangyao Song revised the manuscript.