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INPLASY

Meta-Analysis of the Association Between Serum Vitamin D Levels and Gastric Cancer

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Zhang, YL.

Corresponding author:
Yingli Zhang

1227048260@qq.com

Author Affiliation:
Jilin University.

ADMINISTRATIVE INFORMATION

Support - No.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 March 2025 and was last updated on 13 March 2025.

INTRODUCTION

Review question / Objective The aim of this study is to investigate the correlation between serum vitamin D levels and the risk of gastric cancer incidence and prognosis, in order to provide scientific evidence for the prevention and treatment of gastric cancer.

Condition being studied Gastric cancer, as one of the malignant tumors threatening human life and health, has consistently high incidence and mortality rates. Its pathogenesis is complex and diverse, involving environmental, genetic, lifestyle, and other factors. Current related research remains incomplete. Drug therapy is one of the main treatment methods for gastric cancer, but it is expensive and its efficacy has not yet reached an ideal level. Therefore, there is an urgent need to explore an economical and effective prevention and treatment approach to reduce the risk of gastric cancer occurrence and inhibit its progression. Vitamin D, as an essential fat-soluble vitamin in the human body, not only plays a crucial role in maintaining normal blood calcium levels and bone health but also has extensive extra-skeletal effects. In recent years, the relationship between vitamin D and tumors has attracted significant attention. Studies have shown that vitamin D deficiency may be closely related to the development and progression of various cancers. Although some studies have explored the relationship between serum vitamin D and gastric cancer, the results have not been consistent, and most studies have limited sample sizes and lack systematic analysis.

METHODS

Participant or population Gastric cancer patients and healthy individuals.

Intervention Measure the serum vitamin D levels in gastric cancer patients and healthy individuals.

Comparator Serum vitamin D levels in healthy individuals.

Study designs to be included Case-control studies and cohort studies.

Eligibility criteria The diagnosis of gastric cancer is confirmed by pathological examination of lesion tissue obtained through gastroscopy, and staging is performed using the TNM staging system.

Information sources Search PubMed, Embase, Web of Science, Cochrane Library, China National Knowledge Infrastructure (CNKI), VIP Database, and Wanfang Database for all literature published from the inception of these databases until December 31, 2024, regarding the correlation between serum vitamin D levels and gastric cancer. Relevant literature will be screened based on predefined inclusion and exclusion criteria.

Main outcome(s) The risk of gastric cancer occurrence and the prognosis of gastric cancer.

Quality assessment / Risk of bias analysis Newcastle-Ottawa Scale, NOS.

Strategy of data synthesis RevMan 5.4.1 software was selected for data analysis. If \(P > 0.10 \) or \(I² \leq 50\% \), it indicates low heterogeneity, and a fixed effects model (FEM) was used for analysis. Conversely, if \(P \leq 0.10 \) or \(I² > 50\% \), it suggests significant heterogeneity, and a random effects model (REM) was employed for analysis.

Subgroup analysis Subgroup analysis was not conducted.

Sensitivity analysis RevMan 5.4.1 software was selected for sensitivity analysis. By excluding the study with the largest weight proportion, the combined effect size was recalculated to observe whether there were significant changes in the recombined effect size.

Country(ies) involved China - Jilin University.

Keywords Vitamin D, Gastric Cancer, Meta-Analysis.

Contributions of each author

Author 1 - Yingli Zhang.
Email: 1227048260@qq.com

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