

INPLASY PROTOCOL

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The role of calcium and vitamin D dietary intake on risk of colorectal cancer: Systematic review and meta-analysis of case-control studies

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Review question / Objective: In case-control studies, does calcium and/or vitamin D intake from food influence the occurrence of colorectal cancer?

Condition being studied: Potential publications analyzed the association of dietary intake of calcium and/or Vitamin D with the risk of colorectal cancer (CRC), compared dose-response in case-control studies.

Information sources: The electronic database of PubMed, Scopus and EMBASE. In addition, the reference list from original reports and previous reviews will be reviewed, and manually selected for other available publications. When the information is incomplete, we will try to connect with the authors.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 May 2020 and was last updated on 27 May 2020 (registration number INPLASY202050098).

INTRODUCTION

Review question / Objective: In case-control studies, does calcium and/or vitamin D intake from food influence the occurrence of colorectal cancer?

Rationale: The scientific evidence collected about the role of calcium and vitamin D (VIT D) in the diet, and its association with colorectal cancer (CRC), attributes a likely protective role to calcium. In the case of vitamin D, the evidence is limited. To provide a greater degree of evidence, we

will carry out this systematic review and meta-analysis on case-control studies measuring calcium and vitamin D intakes and the relationship with.

Condition being studied: Potential publications analyzed the association of dietary intake of calcium and/or Vitamin D with the risk of colorectal cancer (CRC), compared dose-response in case-control studies.

METHODS

Search strategy: A through search will be performed up to October 31, 2019 by two reviewers within PubMed, Scopus and EMBASE, using the following search strategy: (cancer OR tumour OR carcinoma OR neoplasm) AND (colorectal OR colon OR rectum OR rectal) AND (calcium OR (vitamin AND d) OR (dairy AND products) AND (diet) AND (case OR controls).

Participant or population: Men and Women; Cases of CRC and Controls.

Intervention: Dietary intake of calcium or vitamin D.

Comparator: Dose-response analysis (Increase for each 300 mg calcium/day or 100UI VitD/day).

Study designs to be included: Case-control studies.

Eligibility criteria: Original articles; written in english language; with design was a case-control study; studies should report the associations of histological diagnosed CRC risk with dietary calcium and/or vitamin D intake from diet using relative risk (RR), hazard ratio, or odds ratio (OR) with 95% confidence interval (CI) to estimate the association for each category of dietary calcium and/or vitamin D intake.

Information sources: The electronic database of PubMed, Scopus and EMBASE. In addition, the reference list from original reports and previous reviews will be reviewed, and manually selected for other available publications. When the

information is incomplete, we will try to connect with the authors.

Main outcome(s): Risk of Colorectal Cancer.

Additional outcome(s): None.

Data management: All statistical analyses will be performed using Stata 13.0 (StataCorp LP, College station, TX).

Quality assessment / Risk of bias analysis: The methodological quality of the included studies will be assessment using the Newcastle-Ottawa Scale. NOS score greater than 4 will be considered acceptable and greater than 7 will be considered high quality. The publication bias will be determined with the Begg Rank model and Egger linear model.

Strategy of data synthesis: The linear dose-response trend will be derived from the natural logarithm of the risk estimates across the exposure categories. The dose-response OR of primary studies will be combined using the inverse of variance. Heterogeneity will be evaluated using the Q and I² statistics. When an I² figure will be higher than 50%, the random-effect model will be used for pooling the ORs. Otherwise, the fixed-effects model will be applied.

Subgroup analysis: Subgroup analyses and meta-regression will be applied to investigate the sources of heterogeneity by sex, tumor location, median of intakes in controls and geographic location.

Sensibility analysis: Sensitivity analysis will be performed to evaluate robust of pooled results by omitting 1 study each time when heterogeneity was significant.

Language: English.

Country(ies) involved: Spain.

Keywords: Calcium; vitamin D; intake; colorectal cancer; case-control study; meta-analysis.

Dissemination plans: This meta-analysis is part of a doctoral thesis, and will be published at a future date in an international scientific journal.

Contributions of each author:

Author 1 - Juan Francisco Lopez-Caleyá - Author 1 contributed to the design, bibliography review, analysis and drafting the manuscript.

Author 2 - Luis Ortega-Valín - Author 2 contribute to criteria selection, bibliography review and draft the manuscript.

Author 3 - Tania Fernández-Villa - Author 3 contribute to bibliography review, quality analysis and the overall review of the study.

Author 4 - Miguel Delgado-Rodríguez - Author 4 provide statistical expertise and provided feedback in the overall review of the study.

Author 5 - Vicente Martín - Author 5 participate in the study design, criteria selection and collaborate in the overall review of the study.

Author 6 - Antonio J Molina - Author 6 participate in the study design, criteria selection, bibliography review and statistical analysis, and approved the final manuscript.