INPLASY PROTOCOL

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Tea consumption and risk of kidney stones: a dose-response meta-analysis of prospective cohort studies

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Review question / Objective: This dose-response meta-analysis aims to evaluate the association of tea consumption with the risk of kidney stones based on prospective cohort studies.

Condition being studied: Kidney stones is a highly prevalent disease. The prevalence in United States is approximately 11%. On the one hand, kidney stones could cause severe pain and decrease the patients' quality of life. On the other hand, surgical intervention could increase both the patient's and health care financial burdens. Thus, clarifying the relationship between potentially modifiable risk factors and kidney stones is important for its prevention and management.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 March 2023 and was last updated on 28 March 2023 (registration number INPLASY202330115).

INTRODUCTION

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patient's and health care financial burdens. Thus, clarifying the relationship between potentially modifiable risk factors and kidney stones is important for its prevention and management.

METHODS

Participant or population: Inclusion criteria: participants (general population) exclusion criteria: people who had kidney stones at baseline.

Intervention: Tea consumption.

Comparator: No or little consumption of tea.

Study designs to be included: Prospective Cohort Studies.

Eligibility criteria: Inclusion criteria: general population; prospective cohort studies; exposure (tea consumption reported ≥3 categories); outcome (the effect estimates (risk ratio [RR], hazard ratio [HR], or odds ratio [OR]) and 95% confidence intervals (CIs). Exclusion criteria: case control studies and cross-sectional studies.

Information sources: We will search the following electronic bibliographic database: PubMed, the Cochrane Library, EMBASE and Web of Science.

Main outcome(s): Kidney stones.

Quality assessment / Risk of bias analysis: The quality of the included studies will be assessed using the Newcastle-Ottawa Scale (NOS) by two authors independently of each other. The NOS scores range from 0 to 9, and studies scoring 0-3, 4-6, and 7-9 are considered low, moderate, and high quality, respectively.

Strategy of data synthesis: We will perform a statistical analysis for the overall relationship between tea consumption and kidney stone, which based on random-effects model and on comparisons of the highest vs. lowest category of tea consumption. For dose-response analysis, the potential non-linearity association will

be examined by modeling tea intake using restricted cubic splines with three knots at 10, 50, and 95% of the distribution. The Cochran Q and I2 statistics will be applied to detect statistical heterogeneity among studies. Heterogeneity was confirmed with a P-value of less than 0.1 or I2 value of more than 50%. The egger's regression method will be used to detect the publication bias. All statistical analysis will be performed with R software. All statistical tests were two-sided, with $P < 0.05$ considered statistically significant.

Subgroup analysis: Subgroup analyses stratified by sex, tea types, and geographic regions will be performed to access potential sources of heterogeneity.

Sensitivity analysis: We will conduct a sensitivity analysis to assess the effect of every study on the summarized estimate by sequentially excluding one study in one turn.

Country(ies) involved: China.

Keywords: tea consumption; kidney stones; does-response meta-analysis.

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Author 2 - Hao Yu.
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Author 4 - Jinbo Chen.
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