INPLASY PROTOCOL

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None declared.

Association of subclinical thyroid dysfunction with the risk of vertebral fracture: A systematic review and meta-analysis

Pan, WM[1].

Review question / Objective: **To investigate the relation between subclinical thyroid dysfunction and the risk of vertebral fracture.**
Eligibility criteria: **Study was included if they met: (1) Participants: general population free of vertebral fracture; (2) Exposure: SCH or SH; (3) Control: TSH within normal range; (4) Outcome: the effect estimate (risk ratio [RR], hazard ratio [HR], or odds ratio [OR]) with 95% confidence intervals (CIs) for comparisons of SCH or SH and euthyroidism; and (5) Study design: the study had to have prospective cohort design.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 24 May 2023 and was last updated on 24 May 2023 (registration number INPLASY202350093).

INTRODUCTION

Review question / Objective: **To investigate the relation between subclinical thyroid dysfunction and the risk of vertebral fracture**

Condition being studied: **Subclinical thyroid dysfunction have demonstrated associated with an elevated risk of nonvertebral fractures, whereas the association of subclinical thyroid dysfunction with the risk of vertebral fracture remained controversial.**

METHODS

Search strategy: **("hypothyroidism" OR "subclinical hypothyroidism" OR "hyperthyroidism" OR "subclinical hyperthyroidism" OR "thyroid diseases" OR "thyroid function" OR "thyroid status") AND**

("fracture" OR "fractures") AND ("vertebral" OR "spine").

Participant or population: General population free of vertebral fracture.

Intervention: SCH or SH.

Comparator: TSH within normal range.

Study designs to be included: The study had to have prospective cohort design.

Eligibility criteria: Study was included if they met: (1) Participants: general population free of vertebral fracture; (2) Exposure: SCH or SH; (3) Control: TSH within normal range; (4) Outcome: the effect estimate (risk ratio [RR], hazard ratio [HR], or odds ratio [OR]) with 95% confidence intervals (CIs) for comparisons of SCH or SH and euthyroidism; and (5) Study design: the study had to have prospective cohort design.

Information sources: We systematically searched PubMed, EmBase, and the Cochrane library to identify potential included studies throughout May 2023.

Main outcome(s): The effect estimate (risk ratio [RR], hazard ratio [HR], or odds ratio [OR]) with 95% confidence intervals (CIs) for comparisons of SCH or SH and euthyroidism.

Quality assessment / Risk of bias analysis: The methodological quality of included studies were assessed using the Newcastle-Ottawa Scale (NOS), which have already partially validated for assessing the quality of observational studies in meta-analysis.

Strategy of data synthesis: The associations of subclinical thyroid dysfunction with the risk of vertebral fracture were examined based on the effect estimate and 95%CI in individual study, and the random-effects model was applied to calculate the pooled RR and 95%CI, which considering the underlying varies among included studies . I2 and Cochren Q statistic were applied to assess the heterogeneity across included studies, and the significant heterogeneity was defined as I2 > 50.0% or P < 0.10.

Subgroup analysis: Subgroup analyses for the associations of subclinical thyroid dysfunction with the risk of vertebral fracture were performed based on sample size, median age, male proportion, follow-up duration, adjusted level, and study quality, while the difference between subgroups was compared using interaction P test.

Sensitivity analysis: The robustness of pooled conclusion was assessed using a sensitivity analysis through sequential removing single study.

Language restriction: No restriction were placed on published language.

Country(ies) involved: China.

Keywords: subclinical thyroid dysfunction; vertebral fracture; systematic review; meta-analysis.

Contributions of each author:

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