Association of Thyroid Hormone Therapy with Mortality in Adults with Subclinical Hypothyroidism: A systematic review and meta-analysis

Huang, HK1; Peng, C2; Wu, BB3; Chang, RH4; Tu, YK5; Munir, K6.

Review question / Objective: P: Adults diagnosed with subclinical hypothyroidism; I: Thyroid hormone therapy; C: No treatment; O: Improving all-cause and cardiovascular mortality.

Condition being studied: Conflicting results of the association between subclinical hypothyroidism and mortality were published from several large-scale meta-analyses. Both American Thyroid Association and European Thyroid Association do not recommend treatment of subclinical hypothyroidism if TSH is 10 mIU/L or less unless the patient is symptomatic. There is no meta-analysis studying the impact of thyroid hormone therapy for subclinical hypothyroidism on mortality.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 June 2020 and was last updated on 23 June 2020 (registration number INPLASY202060086).

Corresponding author: Huei-Kai Huang
drhkhuang@gmail.com

Author Affiliation:
Hualien Tzu Chi Hospital,
Taiwan

Support: None.

Review Stage at time of this submission: Data extraction.

Conflicts of interest: The authors declare that there is no conflict of interest regarding this meta-analysis.
symptomatic. There is no meta-analysis studying the impact of thyroid hormone therapy for subclinical hypothyroidism on mortality.

METHODS


Participant or population: Adults with subclinical hypothyroidism.

Intervention: Levothyroxine.

Comparator: Untreated group or placebo.

Study designs to be included: Observational studies and randomized controlled trials.

Eligibility criteria: 1. participants are adults with diagnosis of subclinical hypothyroidism; 2. outcomes included all-cause mortality and/or cardiovascular-related mortality of both thyroid hormone-treated and untreated groups; 3. original articles.

Information sources: For RCTs: original articles and trial registers. For observational studies: original articles and contact with authors.

Main outcome(s): All-cause mortality.

Additional outcome(s): Cardiovascular mortality.

Quality assessment / Risk of bias analysis: We will use the Newcastle–Ottawa Scale for cohort/case-control studies and Cochrane Risk of Bias Tool for randomized controlled trials.

Strategy of data synthesis: We will synthesize the RRs that were obtained from both RCTs and observational studies to calculate the pooled RRs in our meta-analysis. We will calculate the pooled RRs and their 95% confidence intervals (CIs) using the DerSimonian and Laird random effects model.

Subgroup analysis: The subgroups-to-analysis will be study design, sample size, mean age, and baseline risks of cardiovascular diseases.

Sensibility analysis: A sensitivity analysis will be conducted by omitting each study individually to evaluate the influence of each study on the overall pooled estimate.

Language: English.

Country(ies) involved: Taiwan and the U.S.

Keywords: Subclinical hypothyroidism, Thyroid hormone therapy, Mortality.

Contributions of each author: Author 1 - Huei-Kai Huang. Author 2 - Carol Ching-Hui Peng. Author 3 - Brian Bo-Chang Wu. Author 4 - Rachel Huai-En Chang. Author 5 - Yu-Kang Tu. Author 6 - Kashif Munir.