INPLASY PROTOCOL

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Conflicts of interest:
None.

Pharmacotherapy weight-loss interventions to prevent type 2 diabetes in overweight or obese adults and older adults: A protocol for systematic review and network meta-analysis

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Review question / Objective: **Are pharmacotherapy weight-loss interventions effective in preventing type 2 diabetes in overweight or obese adults and older adults?**
Condition being studied: **Type 2 diabetes; obesity.**
Information sources: **Two independent reviewers will conduct a systematic literature search. Reviewers will search for relevant RCTs in several databases, including PubMed, EMBASE, and the the Cochrane Library database.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 January 2021 and was last updated on 28 January 2021 (registration number INPLASY202110104).

INTRODUCTION

Review question / Objective: **Are pharmacotherapy weight-loss interventions effective in preventing type 2 diabetes in overweight or obese adults and older adults?**

Condition being studied: **Type 2 diabetes; obesity.**

METHODS

Participant or population: **Obese or overweight adults without type 1 or 2 diabetes.**

Intervention: FDA-approved weight loss drugs, e.g., orlistat, lorcaserin, naltrexone-bupropion, phentermine-topiramate, and liraglutide.

Comparator: Placebo, no intervention, or other FDA-approved weight loss drugs.

Study designs to be included: We will only include randomised controlled trials. Observational cohort studies, cross-sectional studies, and case-control studies will be excluded.

Eligibility criteria: Randomised controlled trials studying the effect of the FDA-approved anti-obesity agents on T2D prevention in overweight or obese adults will be included.

Information sources: Two independent reviewers will conduct a systematic literature search. Reviewers will search for relevant RCTs in several databases, including PubMed, EMBASE, and the the Cochrane Library database.

Main outcome(s): Incidence of type 2 diabetes in obesese or overweight adults.

Additional outcome(s): Additional outcomes will include achievement of normoglycaemia, weight loss outcomes, and safety outcome.

Quality assessment / Risk of bias analysis: Two reviewers working independently will assess the qualities of included RCTs using the Cochrane Collaboration's tool for evaluating the risk of bias. The tool contains seven quality items: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other bias.

Strategy of data synthesis: Summary risk ratios (RRs) with 95% CIs will be calculated for dichotomous outcomes. For continuous data, mean differences (MDs) corresponding 95% CIs will be estimated. A random-effects model will be used to estimate the aggregated effects.

Subgroup analysis: If the necessary data are available, subgroup analyses will be done by age sex, and BMI.

Sensitivity analysis: Sensitivity analysis will be performed by excluding studies with overall unclear or high risk of bias.

Country(ies) involved: China.

Keywords: protocol, obesity, network meta-analysis, systematic review, weight-loss drugs, type 2 diabetes.

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