

INPLASY PROTOCOL

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None declared.

Dose-response relationship between circulating GDF-15 and diabetes: A systematic review and meta-analysis

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Review question / Objective: Growth differentiation factor-15 (GDF-15) belongs to the transforming growth factor β superfamily, which is also known as macrophage inhibitory cytokine-1. It has been shown that GDF-15 regulates appetite, body weight, glycolipid metabolism, and infection protection. A number of clinical studies have linked increased GDF-15 levels to metabolic syndrome, hyperglycemia, dyslipidemia and insulin resistance. Additionally, recent studies have shown that GDF-15 concentrations in blood are significantly higher in diabetics than in pre-diabetics and healthy people. Based on these findings, GDF-15 might be a useful marker to predict diabetes. This meta-analysis aimed to systematically evaluate the dose-response relationship between GDF-15 and diabetes prevalence.

Condition being studied: So far, only a few prospective studies have examined the associations between GDF-15 and the risk of developing type 2 diabetes. Despite this, the results of these studies remain inconsistent. Throughout the last decade, a great number of studies have reported diabetes prevalence based on GDF-15 distribution in different populations, including both clinical and non-clinical populations.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 March 2023 and was last updated on 22 March 2023 (registration number INPLASY202330080).

INTRODUCTION

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syndrome, hyperglycemia, dyslipidemia and insulin resistance. Additionally, recent studies have shown that GDF-15 concentrations in blood are significantly higher in diabetics than in pre-diabetics and healthy people. Based on these findings, GDF-15 might be a useful marker to predict diabetes. This meta-analysis aimed to systematically evaluate the dose-response relationship between GDF-15 and diabetes prevalence.

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METHODS

Participant or population: No matter what population was studied, studies were eligible if they reported the percentage of diabetics in at least three GDF-15 categories.

Intervention: Circulating GDF-15 will be main Exposure/Interventions.

Comparator: Comparing the high versus low, or per 1 ng/mL increase in GDF-15 concentration.

Study designs to be included: Any study design.

Eligibility criteria: Studies were eligible if they reported the percentage of diabetics in at least three GDF-15 categories.

Information sources: The electronic databases including Pubmed, EMBASE, and Web of Science will be searched for the information sources.

Main outcome(s): Combined effects were estimated using odds ratios (ORs) and 95% confidence intervals (CIs). Additionally,

dose-response curves will be plotted for all the included studies.

Quality assessment / Risk of bias analysis: Study quality of the included studies will be assessed using the Newcastle-Ottawa Scale (NOS) for the included studies.

Strategy of data synthesis: Fixed-or random-effects models were applied to estimate the pooled effect size according to heterogeneity among studies.

Subgroup analysis: Subgroup analysis will be conducted based on study region, sample size, sample types, and GDF-15 detection method.

Sensitivity analysis: Sensitivity analyses were performed to confirm the stability of overall pooled OR by removing one study at a time.

Country(ies) involved: China.

Keywords: diabetes prevalence; dose-response; meta-analysis.

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