INPLASY PROTOCOL

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None declared.

Effectiveness of Traditional Chinese medicine syndrome differentiation diet therapy in intervention of type 2 diabetes: protocol for a systematic review and meta-analysis of randomised controlled trials

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Review question / Objective: This study aims to systematically evaluate the effects of TCM syndrome differentiation diet therapy on blood glucose and lipid levels in patients with type 2 diabetes, and to provide reference for clinical application of dietary intervention based on TCM syndrome differentiation.

Information sources: The following nine online electronic databases will be searched from their inception to May 12, 2021: PubMed, Embase, Cochrane Library and four Chinese databases (Chinese National Knowledge Infrastructure (CNKI), Wanfang Database, Chinese Scientific Journal Database Search strategies (VIP) and Chinese Biomedical and Medical Database).

INTRODUCTION

Review question / Objective: This study aims to systematically evaluate the effects of TCM syndrome differentiation diet therapy on blood glucose and lipid levels in patients with type 2 diabetes, and to provide reference for clinical application of dietary intervention based on TCM syndrome differentiation.

Rationale: We will search the following seven online electronic databases from their inception to May 12, 2021: PubMed, Embase, Cochrane Library and four Chinese databases (Chinese National Knowledge Infrastructure (CNKI), Wanfang Database, Chinese Scientific Journal Database Search strategies (VIP) and Chinese Biomedical and Medical Database). Only randomised controlled trials of TCM syndrome differentiation diet therapy treat type 2 diabetes will be involved. The primary outcome measures were blood glucose levels, including fasting blood glucose, 2 h postprandial blood glucose or HbA1c. Secondary outcome measures were lipid levels including cholesterol, triglycerides, high density lipoprotein cholesterol, low density lipoprotein cholesterol, BMI. The risk of bias will be evaluated through the Cochrane Collaboration's Risk of Bias tool. Data on blood glucose levels before and after intervention were reported in the included studies. Eventually, all the data will be analysed via the Review Manager V.5.3 software.

Condition being studied: Type 2 diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia, relative insulin resistance caused by pancreatic β-cell dysfunction and insulin resistance in target organs. According to the latest global diabetes map (9th edition) released by the International Diabetes Federation, in 2019, about 463 million adults aged between 20 and 79 will suffer from diabetes, that is, 1 in 11 people will suffer from diabetes; It is estimated that in 2045, the number of diabetes patients will reach 700.2 million, of which type 2 diabetes accounts for about 90%. Hyperglycemia can cause cardiovascular disease, microvascular disease, diabetic foot and other related complications, and seriously reduce the quality of life of patients. T2DM and its complications contribute significantly to the worldwide burden of mortality and disability, while imposing a severe disease burden on patients and countries. Risk factors for type 2 diabetes include Genetic, environmental, lifestyle and metabolic factors. Lifestyle risk factors included the quantity and quality of diet, inactivity, smoking, stress and depression. There is a two-way relationship between diet and type 2 diabetes, on the one hand, food is a risk factor for type 2 diabetes: a systematic review demonstrated that both total protein and animal protein increased the incidence of T2DM, with red meat and processed meat as risk factors for type 2 diabetes; On the other hand, prospective observational studies and clinical studies have demonstrated the important role of individual nutrients, foods, and dietary patterns in type 2 diabetes, which can be derived from dietary intervention to control blood glucose and reduce complications in type 2 diabetes. Dietotherapy is a basic treatment for diabetes. Currently, dietary treatments for diabetes mainly include modern nutritional dietary interventions, such as ketogenic diet, low carbohydrate diet, dietary fiber diet, etc. However, conventional diet therapy only considers the glycemic index and energy efficiency of food, ignoring the cold, hot and cold of food, the characteristics of four qi and five flavors and the specific conditions of patients, so it cannot better play the role of food in the treatment of diabetes. Traditional Chinese medicine (TCM) food therapy is guided by the theory of TCM, pays attention to the overall concept, syndrome differentiation and constitution differentiation, and uses food with mild taste or Chinese medicine as raw materials to prevent diseases and promote rehabilitation, such as syndrome differentiation food therapy, body differentiation food therapy, and TCM food therapy.

METHODS

Search strategy: Search strategies have been created and adapted to the following electronic health databases: PubMed, Embase, Cochrane Library and four Chinese databases (Chinese National Knowledge Infrastructure (CNKI), Wanfang Database, Chinese Scientific Journal Database Search strategies (VIP) and Chinese Biomedical and Medical Database). We have used the following index terms and their synonyms. Language

or year restrictions will not be considered in this study. Search strategy used in PubMed database: #1: "type 2 diabetes" [mesh]; #2: (food and nourishment) OR (diet) OR (food therapy); #3: "traditional Chinese medicine" [mesh]. #4: #1 And #2 And #3.

Participant or population: Patients with a definite diagnosis of type 2 diabetes.

Intervention: The intervention measures of the experimental group were TCM diet differentiation or combined intervention measures of the control group; Dieting based on syndrome differentiation is based on the TCM syndrome type of type 2 diabetes, and corresponding TCM diet intervention is given.

Comparator: The intervention measures in the control group included routine treatment, drug treatment, diabetic diet therapy and so on.

Study designs to be included: This analysis will merely cover the randomised controlled trials (RCTs). The experiments on animals and non-randomised clinical trials will not be considered.

Eligibility criteria: Type of studies This analysis will merely cover the randomised controlled trials (RCTs). The experiments on animals and non-randomised clinical trials will not be considered. Type of participants Patients with a definite diagnosis of type 2 diabetes Type of interventions and controls the intervention measures of the experimental group were TCM diet differentiation or combined intervention measures of the control group; The intervention measures in the control group included routine treatment, drug treatment, diabetic diet therapy and so on. Dieting based on syndrome differentiation is based on the TCM syndrome type of type 2 diabetes, and corresponding TCM diet intervention is given. Type of outcome measures The primary outcome measures were blood glucose levels, including fasting blood glucose, 2 h postprandial blood glucose or HbA1c. Secondary outcome measures were lipid levels including

cholesterol, triglycerides, high density lipoprotein cholesterol, low density lipoprotein cholesterol, BMI. Data on blood glucose levels before and after intervention were reported in the included studies.

Information sources: The following nine online electronic databases will be searched from their inception to May 12, 2021: PubMed, Embase, Cochrane Library and four Chinese databases (Chinese National Knowledge Infrastructure (CNKI), Wanfang Database, Chinese Scientific Journal Database Search strategies (VIP) and Chinese Biomedical and Medical Database).

Main outcome(s): The primary outcome measures were blood glucose levels, including fasting blood glucose, 2 h postprandial blood glucose or HbA1c.

Additional outcome(s): Secondary outcome measures were lipid levels including cholesterol, triglycerides, high density lipoprotein cholesterol, low density lipoprotein cholesterol, BMI.

Data management: Two researchers will independently extract and tabulate the following data items using the Microsoft Excel 2016 software: (1) characteristics of the study: authors, year, study design, sample size;(2) characteristics of patients: age, sex, course of disease;(3) intervention: trial group intervention, control group intervention, drug intervention time;(4) outcomes of the study: fasting blood glucose, 2 h postprandial blood glucose or HbA1c and so on.

Quality assessment / Risk of bias analysis: The Cochrane evaluation manual 5.3.3 was used as a benchmark to evaluate the the risk of bias of all the included RCT studies, based on the following aspects: Random serial generation; allocation scheme hiding; blinding method; data integrity; selective reporting; and other sources of bias. According to the above indicators, the answer of the two researchers is that YES means low risk of bias, NO means high risk of bias, and unclear means uncertain risk of bias.

Strategy of data synthesis: Reman5.3 software was used for meta-analysis. Mean difference (MD) was used as the statistic of effect analysis for measurement data, and risk ratio (RR) was used as the statistic of effect analysis for dichroditic variables. 95% confidence intervals (CI) were provided for each effect size.

Subgroup analysis: The subgroup analyses are planned as follows: 1. the fasting blood glucose level before intervention ($7 \leq T < 9$ mmol/L, $9 \leq T < 11$ mmol/L, and $11 \leq T < 13$ mmol/L). 2. the 2h postprandial blood glucose level before intervention ($11.1 \leq T < 13$ mmol/L, $13 \leq T < 15$ mmol/L, $15 \leq T < 17$ mmol/L). 3. the different intervention times.

Sensitivity analysis: If sufficient studies are available, we will conduct a sensitivity analysis to assess the robustness of results. This analysis will be performed by changing inclusion criteria, excluding low-quality studies, and using different statistical methods to analyze the same data.

Language: Language restrictions will not be considered in this study.

Country(ies) involved: China.

Keywords: TCM syndrome differentiation diet therapy, type 2 diabetes, systematic review, meta-analysis.

Dissemination plans: We plan to present the results of this systematic review in a peer-reviewed scientific journal, conferences and the popular press.

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