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SYSTEMATIC REVIEW

Review of systematic reviews and Meta-analyses investigating Traditional Chinese Medicine treatment for type 2 diabetes mellitus

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Abstract

OBJECTIVE: To conduct a review of the systematic reviews and meta-analyses on the Traditional Chinese Medicine (TCM) treatment of type 2 diabetes mellitus (T2DM).

METHODS: We searched PubMed, Cochrane, Web of Science, Chinese Biomedical Literature Database (CBM), China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Database (VIP), Wanfang, and other databases from database inception to May 2014 for systematic reviews and meta-analyses on TCM treatment of T2DM. Manuscripts were read by two investigators if they met the inclusion criteria, and data were extracted. A Measurement Tool to Assess Systematic Reviews (AMSTAR) was used to classify research quality, and the evidence quality was graded by the Grade of Recommendation, Assessment, Development, and Evaluation (GRADE) system.

RESULTS: Eighteen systematic reviews and meta-analyses were considered. Fifteen analyzed the efficacy of Chinese herbal medicines, and three investigated the efficacy of acupuncture. AMSTAR evaluation ranged from 3-10, and re-evaluation of the main results implied that treatment of T2DM with TCM has certain advantages when compared with conventional Western medicine. However, the evidence quality was generally low.

CONCLUSION: This work shows favorable evidence for the clinical treatment of TCM on T2DM. However, it is recommended that evidence-based decisions are made based on clinical trials because of the GRADE scores of the studies. To achieve higher quality of clinical research, clinical research on TCM requires specific and suitable research methods. Further trials may increase the quality of evidence to evaluate the clinical efficacy of TCM for T2DM.

Key words: Medicine, Chinese traditional; Diabetes Mellitus, type 2; Review; Meta-analysis

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a common disease

with a complex etiology. World Health Organization reported that in 2000 there were 151 million people suffering from diabetes worldwide, and that an estimated 300 million people will suffer from diabetes in 2025.[1,2] The current pace of development of diabetes has far exceeded expectations. The prevalence of diabetes and prediabetes among Chinese adults is 9.7% and 15.5%, respectively,[3,4] up from less than 1% in 1980, 2.5% in 1994, and 5.5% in 2000. Diabetes is a risk factor for cardiovascular disease and stroke, which caused 29 million deaths by 2010.[5,6] T2DM can cause a variety of complications if blood glucose levels are not controlled, and results in the use of medications, high outpatient and inpatient costs, and requires expensive diagnostic tests. Furthermore, absenteeism from recurrent symptoms can cause indirect economic losses. Modern treatment for T2DM is mainly *via* Western Medicine. However, severe side-effects of medications make complementary and alternative therapies more appealing among patients and clinicians. These complementary treatments include herbs, acupuncture, and other Traditional Chinese Medicine (TCM).[7]

A systematic review re-evaluates collected systematic reviews on the treatment, diagnosis, and other aspects of specific disease or health problems, and can provide a higher quality of evidence for readers.[8] Numerous systematic reviews and meta-analyses on TCM management of T2DM have been published. However, the methodological quality and limitations of individual studies has resulted in a lack of quality evidence. Therefore, this study aims to re-evaluate the systematic reviews and meta-analyses, and classify their quality of evidence using the Grade of Recommendation, Assessment, Development, and Evaluation (GRADE) system.

MATERIALS AND METHODS

Search strategy

PubMed, Cochrane, Web of Science, Chinese Biomedical Literature Database (CBM), China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Database (VIP), and Wanfang databases were searched on computer from database inception to May 2014. The grey literature was also searched using the CNKI and Wanfang doctor/master thesis database. Different combinations of key words and random words (Cochrane Library [MeSH], PubMed [MeSH], CBM [MeSH]) were chosen based on different databases. Meanwhile, the references attached to the article or related reviews were tracked, and interventions were excluded from the retrieval strategy. Search terms included: type 2 diabetes mellitus, systematic reviews, and meta-analysis. The search strategy was presented as follows, taking the Cochrane Library as an example.

#1 Type 2 diabetes mellitus
#2 Type 2 diabetes mellitus [MeSH Terms]
#3 T2DM
#4 Meta-Analysis
#5 Meta-Analysis [MeSH Terms]
#6 Meta-Analysis [Publication Type]
#7 Systematic review
#8 #1 OR #2 OR #3
#9 #4 OR #5 OR #6 OR #7
#10 #8 AND #9

Inclusion criteria

(a) Systematic Review or meta-analysis on TCM treatment for T2DM as a primary intervention with at least one randomized controlled trial (RCT) either in English or Chinese. (b) The original study objects were patients with T2DM or in accordance with the relevant domestic or overseas diagnostic criteria, not limited by sex and ethnicity. (c) The interventions were mainly TCM therapy, including herbal medicine (e. g. herb compounds, single herb, Chinese patent medicine, or herbal extracts), acupuncture (e. g. acupuncture, moxibustion, acupoint injection, acupoint application, or auricular acupuncture), and massage. (d) The latest or the most detailed edition was chosen for repeatedly published literature. (e) The grey literature like conference papers meeting the above criteria was considered.

Exclusion criteria

(a) Comparative studies on different Chinese medicine therapies (e. g. Chinese herbal medicine *vs* acupuncture or herb compounds *vs* Chinese patent medicine); (b) quality assessment and methodological studies for systematic reviews; and (c) abstracts or comments for conference papers.

Literature screening and review data extraction

Two individual investigators read all titles and abstracts, and research that was obviously in accordance with the exclusion criteria was eliminated, while those initially meeting the inclusion criteria were read in full. Discrepancies were resolved by discussion or involvement of the third investigator. Information extracted from the review data included: title, author, source, object of study, inclusion criteria, exclusion criteria, treatment group interventions, control group interventions, course of treatment, quality assessment methods, indexes for therapeutic effects, and adverse events. After completing the data extraction form, crosschecking was executed between the two investigators.

Assessment of literature quality and evidence quality

The methodological quality of included systematic reviews or meta-analyses was evaluated by A Measurement Tool to Assess Systematic Reviews (AMSTAR). The AMSTAR tables include 11 items, each with comment options of "YES," "NO," "NOT CLEAR," or "NOT USED." Each item with the answer "YES" is recorded as 1 point, while answers to the rest are recorded as 0 points, for a potential total of 11.[9] The quality