

INPLASY PROTOCOL

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Conflicts of interest:
None declared.

INTRODUCTION

Review question / Objective: The subjects were diabetic patients who met the WHO's criteria for diagnosis and classification of DM. The intervention group received Tai Chi

Quality Assessment of Systematic Reviews Conducted on Traditional Chinese Exercises in Controlling Diabetes Mellitus

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Review question / Objective: The subjects were diabetic patients who met the WHO's criteria for diagnosis and classification of DM. The intervention group received Tai Chi or Health Qigong (BaDuanJin, WuQinXi, YiJinJing); while the control group took routine treatment or routine exercises or stretching, yoga, square dance, and other specific exercises or blank control. The outcome indices included blood indices (FBG, 2hPBG, HbA1c, TC, TG, LDL, HDL, FINS, HOMA), anthropometric indices (BMI, waistline, hipline, waist-to-hip ratio), psychological indices (anxiety, depression), and quality of life.

Information sources Online databases including CNKI, VIP Chinese Journal Full Text Database, WANFANG Data, Web of Science, and PubMed were searched from inception to December 31, 2019, with the mode of subject words combined with the following search terms: Healthqigong, Qigong, Baduanjin, Wuqinxi, Yijinjing, Taiji, Tai Chi, Tai Chi Chuan, Diabetes, Systematic review, and Meta-analysis. We excluded the re-published literature, literature whose data can not be extracted or full-text can not be obtained, Conference abstracts, Non-Chinese or non-English literature, and protocol for systematic reviews.

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 INPLASY202330079).

or Health Qigong (BaDuanJin, WuQinXi, YiJinJing); while the control group took routine treatment or routine exercises or stretching, yoga, square dance, and other specific exercises or blank control. The outcome indices included blood indices

(FBG, 2hPBG, HbA1c, TC, TG, LDL, HDL, FINS, HOMA), anthropometric indices (BMI, waistline, hipline, waist-to-hip ratio), psychological indices (anxiety, depression), and quality of life.

Rationale: With the increase of original studies and systematic reviews/meta-analyses on the intervention effects of traditional Chinese exercises on DM, the research team believes that it is necessary to systematically summarize and analyze the evidence from systematic reviews/meta-analyses. This study aims to assess systematic reviews of interventions of BaDuanJin, WuQinXi, YiJinJing, and Tai Chi, which are popular traditional Chinese exercises, conducted with relevant studies, on DM. The purpose of this study was to summarize the effects of traditional Chinese exercises on DM more comprehensively and systematically. Furthermore, it aims to provide data support and decision basis for the clinical interventions of DM.

Condition being studied: According to the data released by IDF in 2019, China has currently 116.4 million diabetics, the largest number of adults (20-79 years old) with DM in the world[3], which poses a major challenge to the country's sustainable development. Therefore, the Chinese government vigorously advocates the national fitness campaign, and researchers are also concerned about various means to effectively prevent and control the development of DM. Among the many forms of exercise, traditional Chinese exercises such as Tai Chi and Health Qigong have attracted more and more attention for their safety, culture, and wide applicability. Some data at home and abroad have also expounded the good fitness and rehabilitation effects of traditional Chinese exercises from different perspectives, such as strengthening cardiopulmonary and respiratory functions, improving balance capacity, building muscle strength, endurance, and flexibility, preventing falls, lowering total cholesterol (TC), raising high-density lipoprotein cholesterol levels (HDL-c), lowering glycosylated hemoglobin (HbA1c), lowering

fasting blood glucose (FBG), lowering waistline and hipline, reducing body fat, enhancing immune function, enhancing nervous system function, improving brain plasticity, improving cognitive function, regulating mental state, relieving stress, lowering anxiety and depression levels, enhancing self-confidence, improving sleep quality, relieving lumbodorsal pain, increasing indices related to the quality of life, etc. Previous studies have shown that traditional Chinese exercises play a significant role in improving the indices related to DM. As the clinical study on the intervention effects of traditional Chinese exercises on DM becomes a hot topic, the relevant studies on systematic reviews also show an increasing trend. The different standards for the included literature, time span, analytical methods, and forms of exercise in the existing studies on systematic reviews can lead to different conclusions. From the existing systematic reviews, it is hard to conclude the beneficial effects of exercise, especially traditional Chinese exercises, on the management of DM. With the increase of original studies and systematic reviews/meta-analyses on the intervention effects of traditional Chinese exercises on DM, the research team believes that it is necessary to systematically summarize and analyze the evidence from systematic reviews/meta-analyses. This study aims to assess systematic reviews of interventions of BaDuanJin, WuQinXi, YiJinJing, and Tai Chi, which are popular traditional Chinese exercises, conducted with relevant studies, on DM. The purpose of this study was to summarize the effects of traditional Chinese exercises on DM more comprehensively and systematically. Furthermore, it aims to provide data support and decision basis for the clinical interventions of DM.

METHODS

Search strategy: Online databases including CNKI, VIP Chinese Journal Full Text Database, WANFANG Data, Web of Science, and PubMed were searched from inception to December 31, 2019, with the mode of subject words combined with the

following search terms: Healthqigong, Qigong, Baduanjin, Wuqinxi, Yijinjing, Taiji, Tai Chi, Tai Chi Chuan, Diabetes, Systematic review, and Meta-analysis.

Participant or population: The subjects were diabetic patients who met the WHO's criteria for diagnosis and classification of DM.

Intervention: The intervention group received Tai Chi or Health Qigong (BaDuanJin, WuQinXi, YiJinJing).

Comparator: The control group took routine treatment or routine exercises or stretching, yoga, square dance, and other specific exercises or blank control.

Study designs to be included: Chinese and English systematic reviews or meta-analyses of randomized controlled trials (RCT) of interventions of BaDuanJin, WuQinXi, YiJinJing, and Tai Chi on DM were included. The subjects were diabetic patients who met the WHO's criteria for diagnosis and classification of DM.

Eligibility criteria: Chinese and English systematic reviews or meta-analyses of randomized controlled trials (RCT) of interventions of BaDuanJin, WuQinXi, YiJinJing, and Tai Chi on DM were included. The subjects were diabetic patients who met the WHO's criteria for diagnosis and classification of DM. We excluded the re-published literature, literature whose data can not be extracted or full-text can not be obtained, Conference abstracts, Non-Chinese or non-English literature, and protocol for systematic reviews.

Information sources: Online databases including CNKI, VIP Chinese Journal Full Text Database, WANFANG Data, Web of Science, and PubMed were searched from inception to December 31, 2019, with the mode of subject words combined with the following search terms: Healthqigong, Qigong, Baduanjin, Wuqinxi, Yijinjing, Taiji, Tai Chi, Tai Chi Chuan, Diabetes, Systematic review, and Meta-analysis. We excluded the re-published literature, literature whose data can not be extracted

or full-text can not be obtained, Conference abstracts, Non-Chinese or non-English literature, and protocol for systematic reviews.

Main outcome(s): The outcome indices included blood indices (FBG, 2hPBG, HbA1c, TC, TG, LDL, HDL, FINS, HOMA), anthropometric indices (BMI, waistline, hipline, waist-to-hip ratio), psychological indices (anxiety, depression), and quality of life.

Quality assessment / Risk of bias analysis: Systematic reviews/meta-analyses of interventions of traditional Chinese exercises on diabetes mellitus were searched from PubMed, Web of Science, CNKI, WanFang, and CQVIP databases. Two researchers independently screened the studies and extracted data. The methodological quality and quality of evidence of included studies were assessed using AMSTAR2 and GRADE, respectively.

Strategy of data synthesis: Systematic reviews/meta-analyses of interventions of traditional Chinese exercises on diabetes mellitus were searched from PubMed, Web of Science, CNKI, WanFang, and CQVIP databases. Two researchers independently screened the studies and extracted data. The methodological quality and quality of evidence of included studies were assessed using AMSTAR2 and GRADE, respectively. Two researchers independently completed the assessment of the quality of literature. The methodological quality of literature was assessed using AMSTAR2, which was published in 2017 as a revised version of AMSTAR (2007 edition). The quality of evidence of outcome indices was assessed using Grades of Recommendations Assessment, Development and Evaluation (GRADE), which was officially launched in 2004, and developed by the GRADE working group established in 2000 consisting of 19 countries and international organizations including WHO, as one of the current international standards for the assessment of the quality of evidence and the grade of the strength of recommendation [26].

Based on the study design, GRADE assesses the quality of evidence against five downgrading factors of RTC (i.e., risk of bias, consistency, accuracy, indirectness, and risk of publication bias), with the grade divided into high, moderate, low, or very low.

Subgroup analysis: The study is to assess the quality/efficacy of systematic reviews conducted on the effects of traditional Chinese exercises on controlling diabetes mellitus. Systematic reviews/meta-analyses of interventions of traditional Chinese exercises on diabetes mellitus were searched from PubMed, Web of Science, CNKI, WanFang, and CQVIP databases. Two researchers independently screened the studies and extracted data. The methodological quality and quality of evidence of included studies were assessed using AMSTAR2 and GRADE, respectively.

Sensitivity analysis: The study is to assess the quality/efficacy of systematic reviews conducted on the effects of traditional Chinese exercises on controlling diabetes mellitus. Systematic reviews/meta-analyses of interventions of traditional Chinese exercises on diabetes mellitus were searched from PubMed, Web of Science, CNKI, WanFang, and CQVIP databases. Two researchers independently screened the studies and extracted data. The methodological quality and quality of evidence of included studies were assessed using AMSTAR2 and GRADE, respectively.

Language restriction: Chinese and English.

Country(ies) involved: China.

Keywords: BaDuanJin (eight-section brocade), Tai Chi, WuQinXi (five-animal game), YiJinJing, Diabetes.

Contributions of each author:

Author 1 - Huifeng Wang contributed to drawing and checking data, assess the quality of evidence of systematic reviews/meta-analyses of documents related

outcome indices using GRADE, write the discussion part of this paper.

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