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*Review Article*

# Meta-Analysis on the Efficacy of Traditional Chinese Medicine Decoction in the Treatment of Cardiac Neurosis Complicated with Depression and Anxiety

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*Objective*. To analyze and evaluate the effectiveness of traditional Chinese medicine decoction (TCMD) in the treatment of cardiac neurosis (CN) complicated with depression and anxiety. *Methods*. Relevant literature on TCMD in the treatment of CN complicated with depression and anxiety was retrieved from Chinese and English databases, and the retrieved literature was included and excluded. The quality of the retrieved literature was evaluated according to the Cochrane system, and the meta-analysis was undertaken with RevMan5.3 software. *Results*. A total of 10 papers were included, including 686 patients and 349 patients in the treatment group (131 males and 218 females), and there were 337 cases in the control group (131 males and 206 females). The results of the meta-analysis showed that compared with the control group, TCMD could significantly improve palpitation (MD = 0.78, 95% CI = 0.55–1.01, $P < 0.00001$), chest tightness/chest pain (MD = 0.53, 95% CI = 0.10–0.97, $P < 0.05$), shortness of breath (MD = 0.60, 95% CI = 0.26–0.93, $P = 0.0005$), and TCM syndrome score (MD = 5.91, 95% CI = 4.32–7.49, $P < 0.00001$), reduce resting heart rate (MD = 13.21, 95% CI = 9.01–17.40, $P < 0.00001$), and could reduce psychological scale scores, such as Zung's self-rating Depression Scale (MD = 7.90, 95% CI = 4.98–10.83, $P < 0.00001$), Zung's self-rating Anxiety Scale (MD = 6.55, 95% CI = 4.25–8.86, $P < 0.00001$), Hamilton Depression Scale (MD = 4.46, 95% CI = 3.00–5.92, $P < 0.00001$), and Hamilton Anxiety Scale (MD = 3.35, 95% CI = 1.85–4.85, $P < 0.0001$). The differences were statistically significant. Tonic drugs were commonly used; *Angelica sinensis*, *Poria cocos*, *Polygala tenuifolia*, Wild jujube kernel, and *Bupleurum* were the most frequently used traditional Chinese medicines. *Conclusion*. TCMD mainly composed of tonic and tranquilizing herbs could significantly improve the clinical symptoms of patients with CN and reduce heart rate, anxiety, and depression scores. However, the evidence grade of the clinical research was limited by the quality of the included literature, and more high-quality clinical trials are still needed for further verification. This trial was registered with PROSPERO: CRD42022312164

## 1. Introduction

Cardiac neurosis, also known as cardiovascular neurosis, is a psychological and physiological syndrome characterized by circulatory symptoms in the absence of underlying organic disease. The syndrome is characterized by dyspnea, precordial pain, palpitations, and shortness of breath as common symptoms. In recent years, the prevalence of CN has increased significantly, accounting for more than 30% of the total number of patients in cardiology [1, 2]. The study found that most patients with CN are mainly mental workers, and CN is most common in young and middle-aged people and more often in females than males, especially in menopausal women. [1, 3, 4].

At present, the etiology and pathogenesis of CN are not fully understood, and mental state, physical state, nervous system, genetic factors, and external environmental stimuli may all be related to the disease. Clinically, Western medical

treatment is mainly based on antidepressants, antianxiety, neuromodulators, and $\beta$-blocker drugs, which have moderate short-term effects but poor long-term efficacy.[5].

The treatment of CN in traditional Chinese medicine had formed its characteristics before modern medicine and has unique insights in clinical practice and rehabilitation methods, which have certain advantages in relieving clinical symptoms, improving quality of life, and improving function. The treatment of CN mainly focuses on clinical symptoms, such as "sleeplessness," "heart palpitation," and "depression," and is aimed at regulating the deficiency of internal organs and the imbalance of Qi mechanisms [5–7]. In this study, we investigated the efficacy of TCMD in the treatment of CN and conducted a systematic Meta-analysis, aiming to provide an evidence-based basis for the treatment of CN.

## 2. Methods

Our meta-analysis was conducted based on preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Ethical approval was not required. The study protocol was registered in the PROSPERO international prospective register of systematic review (CRD42022312164).

*2.1. Search Strategy.* The English search terms "Chinese medicine decoction," "Chinese herb medicine," "medicinal broth," "cardiovascular neurosis," and "cardiac neurosis" were searched in Clinical Trials, MEDLINE, EMBASE, PubMed, and The Cochrane Library of Evidence-Based Medicine. And the Chinese search terms "traditional Chinese medicine decoction," "decoction," "Cardiac neurosis," "Cardiovascular neurosis," etc. were searched in China National Knowledge Internet (CNKI), China Clinical Trials Registry, Wanfang database, VIP database (VIP), and China Biomedical Literature Service. The search time range was from the earliest inclusion in the database to December 2021.

*2.2. Inclusion and Exclusion Criteria*

*2.2.1. Inclusion Criteria.* 1 Study type: randomized controlled studies, domestic and foreign studies involving "traditional Chinese medicine decoction (TCMD) for the treatment of cardiac neurosis," and the language of the literature selected for inclusion was Chinese or English. ②The study subjects should be patients with cardiac neurosis, cardiovascular dysfunction, and neurological manifestations and without organic heart disease after the examination. ③ The study subjects should be aged 14–80 years old and the syndrome type in TCM includes Qi stagnation in the heart and chest, Qi depression transforming into the fire, deficiency in the heart and spleen, and Qi and Yin deficiency; the Western medicine diagnosis should refer to the diagnostic criteria of Practical Internal Medicine (15th edition). ④ The treatment group was given TCMD treatment, and various relevant parameters were compared with the control group. ⑤ The result indicators were the Chinese medicine evidence points, heart rate analysis, and psychological scale points analysis [Zung's Depression Self-Rating Scale (SDS), Zung's Anxiety Self-Rating Scale (SAS), Hamilton Depression Scale (HAMD), Hamilton Anxiety Scale (HAMA), Somatization Self-Rating Scale (SSS), etc.].

*2.2.2. Exclusion Criteria.* Exclusion criteria were as follows: ① clinical trial studies with unclear diagnostic criteria, ② research subjects that do not meet the diagnostic criteria of TCM and Western medicine, and ③ repeatedly published papers with no need for clinical outcome indicators.

*2.3. Quality Evaluation Criteria and Data Extraction.* In this study, Cochrane systematic evaluation was used to evaluate the quality of the included literature, including eight sequential items such as random sequence generation, allocation concealment, whether to apply blinding, blinded evaluation, withdrawal/missed visit handling, outcome data integrity, selective reporting of study results and other sources of bias, and evaluation summary. Data screening extraction was done by two investigators individually and eventually combined for analysis, and any disagreement was resolved by discussion and negotiation. The main elements of the evaluation information included the following: ① whether the random assignment was used to the research group, ② whether blinded methods were utilized to evaluate treatment subjects and outcomes, ③ whether the study used allocation concealment, ④ whether complete data were reported in the included literature, and ⑤ whether there were other risks of bias.

*2.4. Statistical Methods.* Meta-Analysis was performed using RevMan5.3 software for the statistical analysis studied in this paper. This analysis was performed using a fixed-effects model if there was statistical homogeneity between studies ($P > 0.05$, $I^2 < 50\%$) and a random-effects model for data analysis when there was statistical heterogeneity between studies ($P < 0.05$, $I^2 > 50\%$).

*2.5. Ethical Statement.* All study results and data analysis in this study evaluation system were approved by the Medical Ethics Committee, so no further approval from the Medical Ethics Committee or patient consent was required.

## 3. Results

*3.1. Search and Screening Results.* In this study, a total of 31 relevant literature in English and Chinese were initially retrieved, and by excluding studies in which the diagnostic criteria did not match those of Chinese and Western medicine, a total of 10 papers with 686 patients were finally included, with 349 cases in the treatment group, including 131 male patients and 218 female patients, and 337 cases in the control group, including 131 male patients and 206 female patients. The literature screening inclusion process was shown in Figure 1, and the basic characteristics of the literature were shown in Table 1.

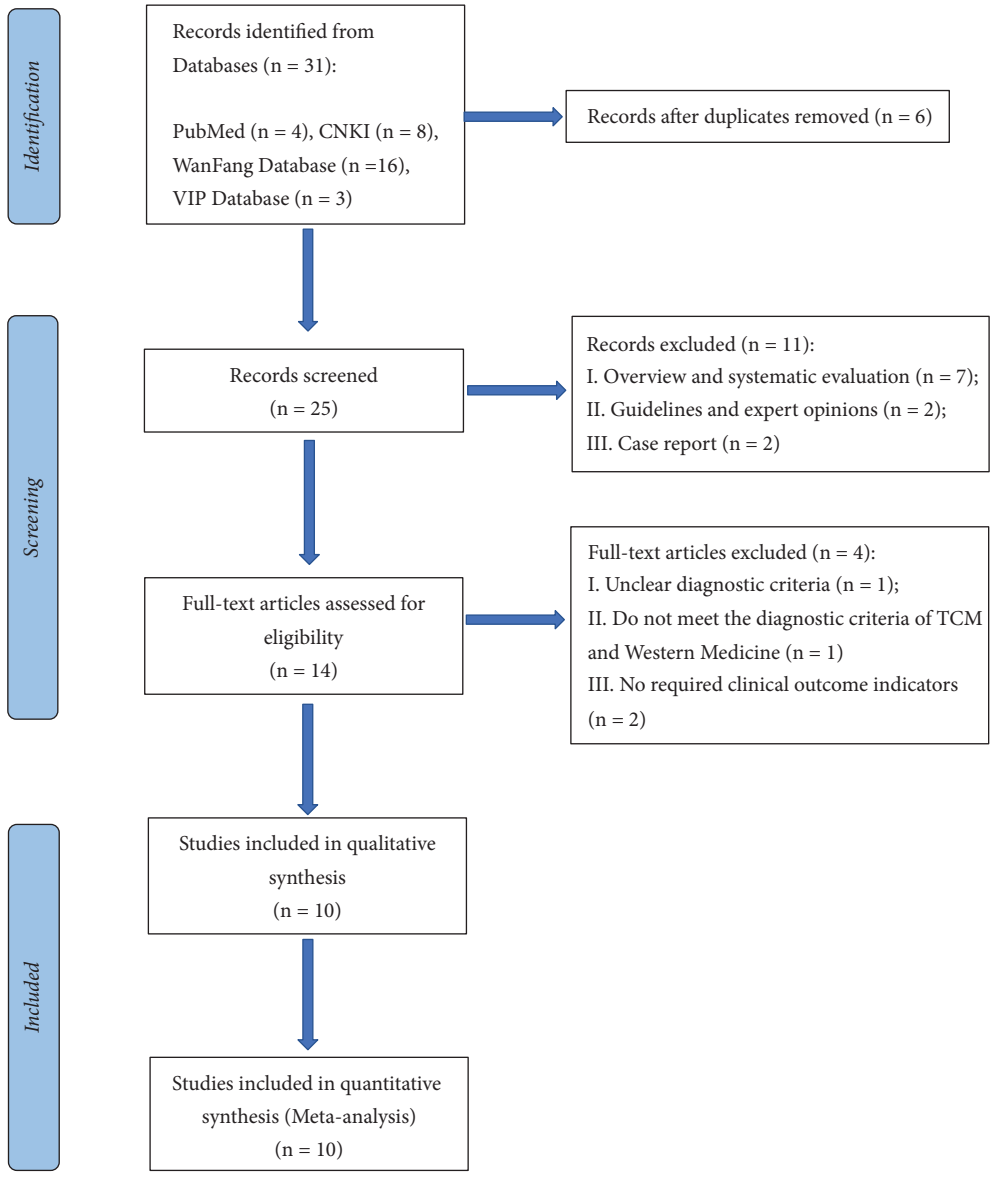


Figure 1: Flow chart of study selection and identification.

*3.2. Methodological Quality.* A total of 4 included papers [9, 10, 12, 16] used the random number table method, 5 papers [11, 13–15, 17] used the randomized control method, 1 paper [8] grouping method was not described, the results of the included literature were not affected by the blinded method, the results data were complete and free of bias, no allocation concealment and withdrawal from follow-up or missed visits, and 1 [8] paper had selective reporting of study results. The methodological quality of the species included literature was evaluated in Figure 2 and Table 2.

*3.3. Meta-Analysis Results*

*3.3.1. Analysis of TCM Evidence Points*

*(1) Heart Palpitations.* 3 papers were included in this analysis [8, 14, 17], and there was heterogeneity in the findings ($I^2 = 93\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group was significantly better than the control group in improving palpitation symptoms, with a statistically significant difference ($MD = 0.78$, 95% $CI = 0.55$–$1.01$, $P < 0.00001$), as shown in Figure 3.

*(2) Chest Tightness/Chest Pain.* 3 papers were included in this analysis [8, 14, 17], and there was heterogeneity in the study results ($I^2 = 98\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group improved chest tightness/chest pain symptoms significantly better than the control group, with a statistically significant difference ($MD = 0.53$, 95% $CI = 0.10$–$0.97$, $P = 0.02 < 0.05$), as shown in Figure 4.

*(3) Shortness of Breath.* 3 papers were included in this analysis [8, 14, 17] and there was heterogeneity in the study results ($I^2 = 98\%$, $P < 0.00001$), so a random-effects model

Table 1: Basic characteristics of the included studies.

| Include studies | Years (*Y*) | Total sample/*N* | | Treatment strategy | | Course of treatment/ Weeks | Adverse reactions |
|---|---|---|---|---|---|---|---|
| | | Treatment group (male/ female) | Control group (male/ female) | Treatment group | Control group | | |
| Li and Jia [8] | 2009 | 52 (20/32) | 50 (20/30) | Shugan Ningxin Decoction (1 dose/d, decoct 300 ml of decoction with water and take it twice warmly in the morning and evening) | Sertraline hydrochloride tablets (oral, 50 mg/ once per night) | 2/8 | Yes (none in the treatment group; 7 cases in the control group) |
| Jiang and Zhou [9] | 2015 | 30 (16/14) | 25 (13/12) | Chaihu guizhi keel oyster Decoction (1 dose/d, add 1.5 g cinnabar to take, take it twice in the morning and evening, decoct twice and combine to obtain 400 ml decoction) | Betaloc (oral, 25 mg/time, once daily) | 2/4 | None |
| Yao [10] | 2016 | 32 (9/23) | 28 (10/18) | On the basis of the control group, jieyu decoction was added | Sertraline hydrochloride (50 mg, once/ day) + lorazepam tablets (1.0 mg, 3 times/ day) + psychotherapy | 2/2 | None |
| Liu [11] | 2016 | 30 (7/23) | 30 (5/25) | Yangxin dingji Decoction (1 dose/d, decoct 300 ml of decoction with water and take it twice warmly in the morning and evening) | Oryzanol tablets (oral, 3 times/d, 20 mg each time) | 1/4 | Yes (none in the treatment group; 2 cases in the control group) |
| Leng [12] | 2018 | 36 (14/22) | 36 (15/21) | Yangxin chaihuan Decoction (Oral, powder, 50–100 ml each time, twice/d) | Patients with high heart rate: Betaloc (oral, 47.5 mg/tablet, 1/d); Patients with insomnia: Right zopiclone tablets (oral, 3 mg/tablet/ time) | Unknown/4 | None |
| Ma [13] | 2020 | 30 (10/20) | 30 (9/21) | Jiawei erxian decoction (decocting, taking 1 packet each time, 2 packets/ day) | Flupentixol and melitracen tablets (oral, 2 tablets/day) | 1/4 | Yes (none in the treatment group; 5 cases in the control group) |
| Wang [14] | 2020 | 33 (17/16) | 33 (18/15) | Shengxian Decoction (Granules, brewing 300 ml with warm water, oral, 2/d, 150 ml/time) | Oryzanol tablets (oral, 3 times/*d*, 20 mg/2 tablets each time) | 1/4 | None |
| Dai et al. [15] | 2021 | 30 (9/21) | 30 (10/20) | On the basis of the control group, Tianwang Buxin Decoction was added (one dose of 250 ml per day, taken in the morning and evening) | Oryzanol tablets (oral, 3 times/*d*, 20 mg/2 tablets each time) | 1/4 | None |
| Tong et al. [16] | 2021 | 43 (16/27) | 43 (18/25) | On the basis of the control group, Suanzaogen Decoction was added (decoction, 1 dose per day, taken in the morning and evening) | Oryzanol tablets (oral, 3 times/d, 20 mg/2 tablets each time) + vitamin B1 (oral, 10 mg each time, 3 times/d) | 1/4 | None |
| Zhang [17] | 2021 | 33 (13/20) | 32 (13/19) | On the basis of the control group, huanglian zhengdan decoction was added (decoction pieces of traditional Chinese medicine, each dose of decoction 300 ml, 150 ml/time, oral, 2/d) | Oryzanol tablets (oral, 3 times/*d*, 20 mg each time) + vitamin B1 (oral, 10 mg each time, 3 times/d) [patients with high heart rate: Betaloc (oral, 23.75–47.5 mg); in case of insomnia, right zopiclone tablets (oral, 2 mg)] | 1/4 | None |

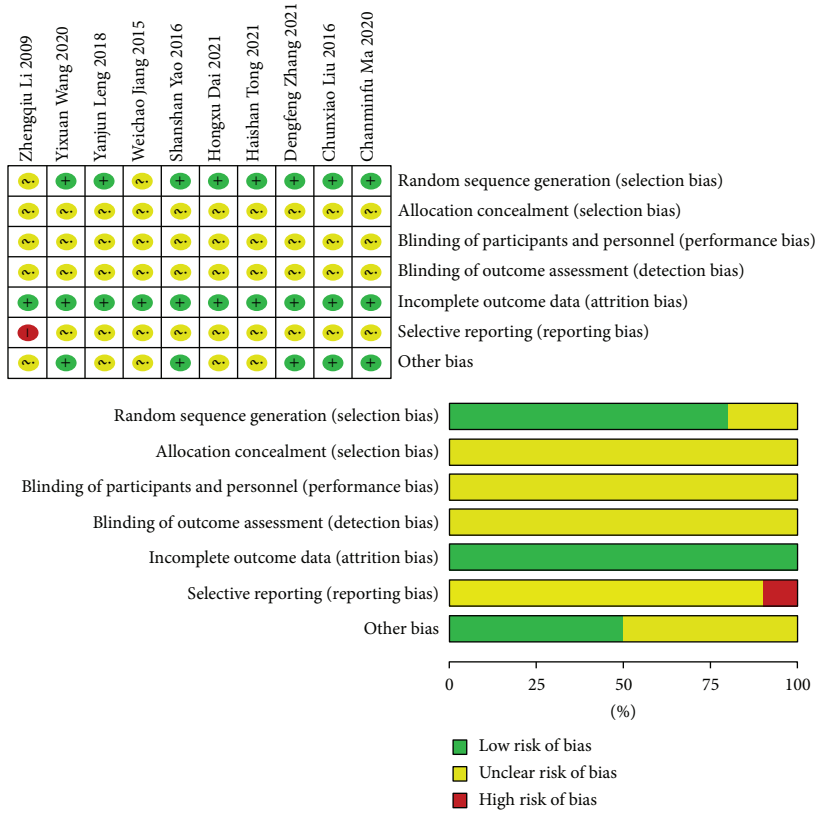


Figure 2: Risk of bias summary and graph.

was used for the combined analysis. The results showed that the treatment group improved shortness of breath symptoms significantly better than the control group, with a statistically significant difference ($MD = 0.60$, 95% $CI = 0.26$–$0.93$, $P = 0.0005$), as shown in Figure 5.

*(4) Total TCM Evidence Score*. 6 papers were included in this analysis [10–13, 15, 17] and there was heterogeneity in the study results ($I^2 = 96\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group outperformed the control group in terms of improvement of clinical symptoms, with a statistically significant difference ($MD = 5.91$, 95% $CI = 4.32$–$7.49$, $P < 0.00001$), as shown in Figure 6.

*3.4. Heart Rate Analysis.* 2 papers were included in this analysis [13, 15], and there was heterogeneity in the study results ($I^2 = 98\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group was superior to the control group in reducing resting heart rate, with a statistically significant difference ($MD = 13.21$, 95% $CI = 9.01$–$17.40$, $P < 0.00001$), as shown in Figure 7.

*3.5. Analysis of Psychological Scale Scores*

*3.5.1. Zung's Self-Rating Scale for Depression (SDS).* 4 papers were included in this analysis [9, 15–17], and there was heterogeneity in the findings ($I^2 = 97\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group outperformed the control group in terms of self-rated antidepressants, with a statistically significant difference ($MD = 7.90$, 95% $CI = 4.98$–$10.83$, $P < 0.00001$), as shown in Figure 8.

*3.5.2. Zung's Self-Assessment Scale for Anxiety (SAS).* 3 papers were included in this analysis [9, 15, 16], and there was heterogeneity in the study results ($I^2 = 93\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group outperformed the control group in terms of self-rated anxiolysis, with a statistically significant difference ($MD = 6.55$, 95% $CI = 4.25$–$8.86$, $P < 0.00001$), as shown in Figure 9.

*3.5.3. Hamilton Depression Scale (HAMD).* 4 papers were included in this analysis [8, 10, 11, 13], and there was heterogeneity in the study results ($I2 = 100\%$, $P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group was superior to the control group in terms of antidepressants, with a statistically significant difference ($MD = 4.46$, 95% $CI = 3.00$–$5.92$, $P < 0.00001$), as shown in Figure 10.

*3.5.4. Hamilton Anxiety Inventory (HAMA).* 6 papers were included in this analysis [8, 10, 11, 13, 14, 17], and there was heterogeneity in the study results ($I^2 = 99\%$,

Table 2: Quality evaluation of research methodology included.

| Included literature | Random sequence generation | Allocation concealment | Blind or not | Blind evaluation | Withdraw/ Lost visit handling | Result data integrity | Selective research report | Other sources of bias |
|---|---|---|---|---|---|---|---|---|
| Li and Jia [8] | Not described | Not described | Not | Not affected by the blind method | Unknown | Completed | Yes | No significant other bias |
| Jiang and Zhou [9] | Random number table method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Yao [10] | Random number table method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Liu [11] | Randomized controlled method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Leng [12] | Random number table method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Ma [13] | Randomized controlled method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Wang [14] | Randomized controlled method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Dai HX et al. [15] | Randomized controlled method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Tong et al. [16] | Random number table method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |
| Zhang [17] | Randomized controlled method | Not described | Not | Not affected by the blind method | Unknown | Completed | No | No significant other bias |

| Study or Subgroup | Experimental Mean | SD | Total | Control Mean | SD | Total | Weight | Mean Difference IV, Random, 95% CI |
|---|---|---|---|---|---|---|---|---|
| Dengfeng Zhang 2021 | 1.11 | 0.31 | 52 | 0.21 | 0.01 | 50 | 36.4% | 0.90 [0.82, 0.98] |
| Yixuan Wang 2020 | 2.48 | 0.06 | 33 | 1.87 | 0.17 | 32 | 37.2% | 0.61 [0.55, 0.67] |
| Zhengqiu Li 2009 | 4.43 | 0.14 | 33 | 3.57 | 0.72 | 33 | 26.4% | 0.86 [0.61, 1.11] |
| *Total (95% CI)* | | | *118* | | | *115* | *100.0%* | *0.78 [0.55, 1.01]* |

Heterogeneity: $\tau^2 = 0.04$; $\chi^2 = 30.66$, df = 2 (P < 0.00001); $I^2 = 93\%$
Test for overall effect: Z = 6.63 (P < 0.00001)

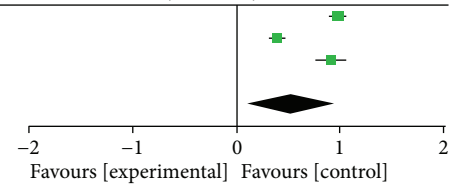


Figure 3: Forest diagram of TCMD on the change value of palpitation score before and after CN treatment.

| Study or Subgroup | Experimental Mean | SD | Total | Control Mean | SD | Total | Weight | Mean Difference IV, Random, 95% CI |
|---|---|---|---|---|---|---|---|---|
| Dengfeng Zhang 2021 | 1.45 | 0.27 | 52 | 1.14 | 0.01 | 50 | 34.0% | 0.31 [0.24, 0.38] |
| Zhengqiu Li 2009 | 3.15 | 0.54 | 33 | 2.79 | 0.14 | 33 | 32.2% | 0.36 [0.17, 0.55] |
| Yixuan Wang 2020 | 2.48 | 0.07 | 33 | 1.56 | 0.29 | 32 | 33.7% | 0.92 [0.82, 1.02] |
| *Total (95% CI)* | | | *118* | | | *115* | *100.0%* | *0.53 [0.10, 0.97]* |

Heterogeneity: $\tau^2 = 0.14$; $\chi^2 = 91.32$, df = 2 (P < 0.00001); $I^2 = 98\%$
Test for overall effect: Z = 2.41 (P = 0.02)

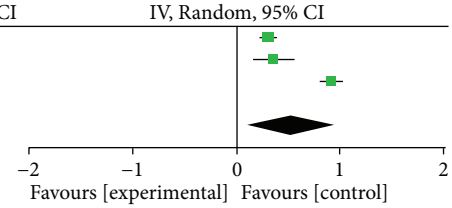


Figure 4: Forest diagram of TCMD on the change value of chest tightness and chest pain scores before and after CN treatment.

| Study or Subgroup | Experimental Mean | SD | Total | Control Mean | SD | Total | Weight | Mean Difference IV, Random, 95% CI |
|---|---|---|---|---|---|---|---|---|
| Dengfeng Zhang 2021 | 0.62 | 0.46 | 52 | 0.08 | 0.01 | 50 | 32.8% | 0.54 [0.41, 0.67] |
| Yixuan Wang 2020 | 1.43 | 0.09 | 33 | 0.56 | 0.12 | 32 | 34.0% | 0.87 [0.82, 0.92] |
| Zhengqiu Li 2009 | 1.16 | 0.28 | 33 | 0.79 | 0.12 | 33 | 33.2% | 0.37 [0.27, 0.47] |
| *Total (95% CI)* | | | *118* | | | *115* | *100.0%* | *0.60 [0.26, 0.93]* |

Heterogeneity: $\tau^2 = 0.09$; $\chi^2 = 82.79$, df = 2 (P < 0.00001); $I^2 = 98\%$
Test for overall effect: Z = 3.46 (P = 0.0005)

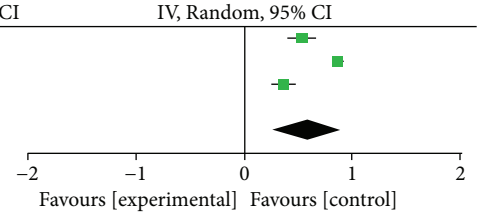


Figure 5: Forest diagram of TCMD on the change value of shortness of breath symptom score before and after CN treatment.

| Study or Subgroup | Experimental Mean | SD | Total | Control Mean | SD | Total | Weight | Mean Difference IV, Random, 95% CI |
|---|---|---|---|---|---|---|---|---|
| Chanminfu Ma 2020 | 15.76 | 1.9 | 32 | 9.7 | 2.99 | 32 | 16.3% | 6.06 [4.83, 7.29] |
| Chunxiao Liu 2016 | 13.61 | 0.37 | 36 | 6.3 | 1.19 | 36 | 17.9% | 7.31 [6.90, 7.72] |
| Dengfeng Zhang 2021 | 15.92 | 4.74 | 30 | 9.1 | 2.44 | 30 | 14.3% | 6.82 [4.91, 8.73] |
| Hongxu Dai 2021 | 13.94 | 0.79 | 32 | 9.9 | 1.42 | 28 | 1 7.6% | 4.04 [3.45, 4.63] |
| Shanshan Yao 2016 | 31.2 | 2.08 | 30 | 23.6 | 2.64 | 30 | 1 6.4% | 7.60 [6.40, 8.80] |
| Yanjun Leng 2018 | 13.2 | 1.14 | 30 | 9.3 | 1.4 | 30 | 17.5% | 3.90 [3.25, 4.55] |
| *Total (95% CI)* | | | *190* | | | *186* | *100.0%* | *5.91 [4.32, 7.49]* |

Heterogeneity: $\tau^2 = 3.62$; $\chi^2 = 129.34$, df = 5 (P < 0.00001); $I^2 = 96\%$
Test for overall effect: Z = 7.30 (P < 0.00001)

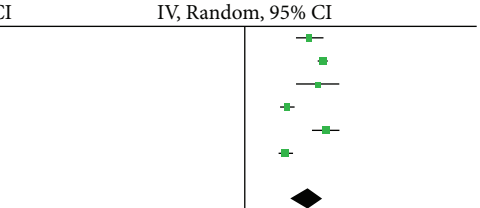


Figure 6: Forest diagram of TCM syndrome integral change value of TCMD before and after CN treatment.

| Study or Subgroup | Experimental Mean | SD | Total | Control Mean | SD | Total | Weight | Mean Difference IV, Random, 95% CI |
|---|---|---|---|---|---|---|---|---|
| Chanminfu Ma 2020 | 16.26 | 2.09 | 30 | 5.2 | 1.64 | 30 | 49.8% | 11.06 [10.11, 12.01] |
| Hongxu Dai 2021 | 28.07 | 0.91 | 30 | 12.73 | 2.06 | 30 | 50.2% | 15.34 [14.53, 16.15] |
| *Total (95% CI)* | | | *60* | | | *60* | *100.0%* | *13.21 [9.01, 17.40]* |

Heterogeneity: $\tau^2 = 8.96$; $\chi^2 = 45.31$, df = 1 (P < 0.00001); $I^2 = 98\%$
Test for overall effect: Z = 6.17 (P < 0.00001)

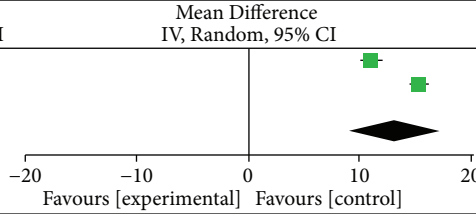


Figure 7: Forest diagram of heart rate change value of TCMD before and after CN treatment.

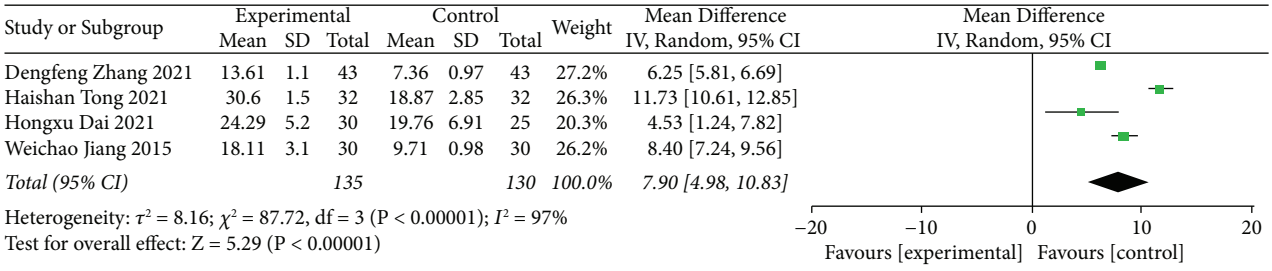


Figure 8: Forest diagram of self-rated antidepressant change value of TCMD before and after CN treatment.

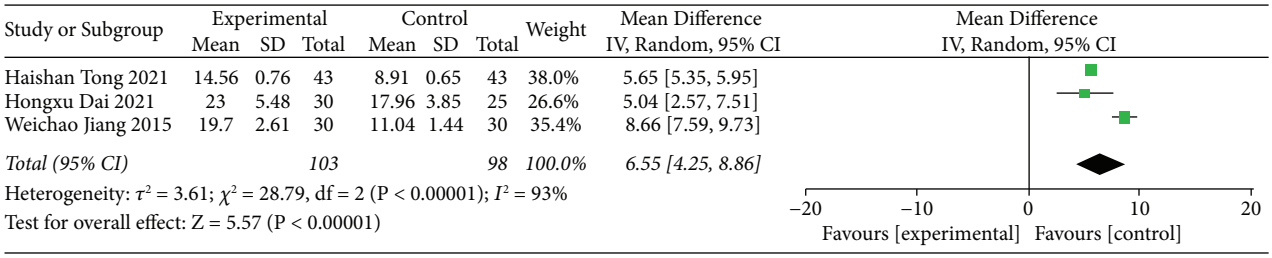


Figure 9: Forest diagram of self-rated antianxiety change value of TCMD before and after CN treatment.

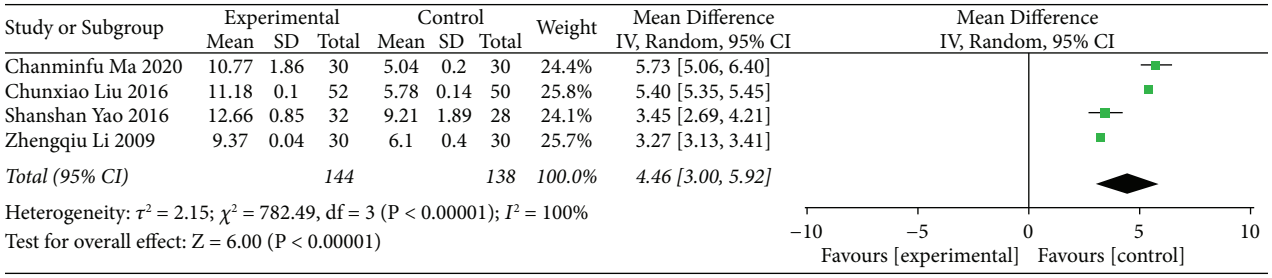


Figure 10: Forest diagram of antidepressant changes of TCMD before and after CN treatment.

$P < 0.00001$), so a random-effects model was used for the combined analysis. The results showed that the treatment group was superior to the control group in terms of anxiolysis, with a statistically significant difference ($MD = 3.35$, 95% $CI = 1.85$–$4.85$, $P < 0.0001$), as shown in Figure 11.

*3.6. Analysis of Traditional Chinese Medicines Use.* Among the 10 literature studies included in this study for the treatment of CN, 55 TCMs were used, with a total frequency of 125 times. Among them, 8 TCMs were used 4 times or more, which were *Angelica sinensis* (6, 4.8%), *Poria cocos* (6, 4.8%), *Polygala tenuifolia* (6, 4.8%), Wild jujube kernel (6, 4.8%), *Bupleurum* (6, 4.8%), White peony (5, 4.0%), Chuanxiong (4, 3.2%), Gan song (4, 3.2%), and 23 TCMs were used once, as shown in Table 3. Among them, the most frequently used drugs were tonic drugs, 29 times in total, accounting for 23.2% of the total frequency, followed by tranquilizing drugs (21, 16.8%), antipyretic drugs (14, 11.2%), and surface relieving drugs (12, 9.6%), as shown in Table 4.

## 4. Discussion

Cardiac neurosis is a typical psychosomatic disease of the circulatory system [18]. With the change in the modern lifestyle and the increase of social and environmental pressure, the transformation of the "Biological-Psychological-Social" medical model and various psychological factors such as anxiety and depression have been gradually emphasized in the development and regression of circulatory system diseases. CN is mainly manifested in heart palpitation, accelerated resting heart rate, chest tightness, chest pain, etc., but there are no signs of organic heart disease [2, 3]. CN mostly occurs in young and middle-aged people, more females than males, especially menopausal women, and mental workers outnumber manual workers [19]. The above somatic symptoms are related to emotion and brain function. Psychological factors are one of the key reasons, patients are usually accompanied by obvious psychological disorders such as anxiety, depression, or neurasthenia. Friedman [20] believes that the hypothalamus may be the site of CN, and the lesions in this area can cause anxiety and affect the functional regulation of many other systems.

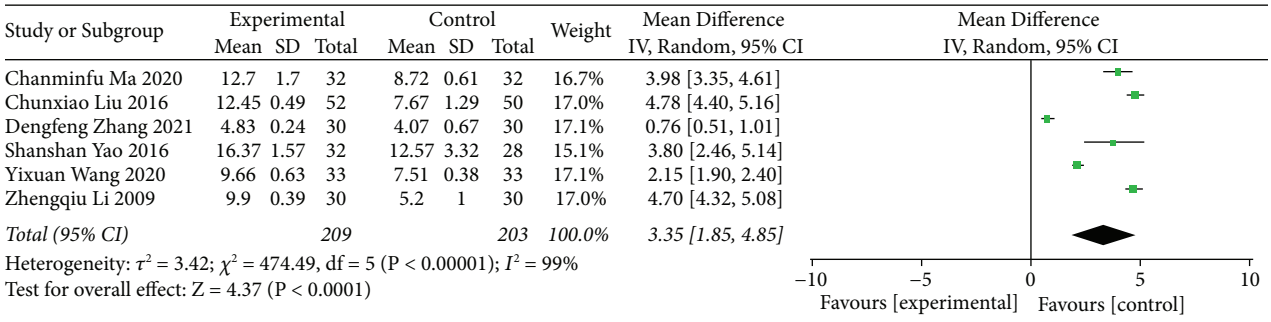


Figure 11: Forest diagram of antianxiety changes of TCMD before and after CN treatment.

Due to the lack of laboratory evidence, CN is generally diagnosed in patients with symptoms, few signs, and no organic heart disease [21]. In recent years, the incidence rate of CN has been increasing. When the psychological burden and mental pain borne by patients due to the disease are serious, it can affect their normal life and work, and the long-term development will further lead to or aggravate organic diseases [22]. At present, there is no effective drug treatment for CN in modern medicine, which mainly depends on psychotherapy combined with corresponding symptomatic treatment, such as oryzanol $\beta$-Receptor blockers, etc.; however, the problems such as large side effects, poor patient compliance, and severe relapse are more prominent.

CN mostly belongs to the category of "palpitation," "depression syndrome," and other diseases in TCM. The occurrence of CN is mostly caused by adverse changes such as constitution, diet, and emotion, resulting in the imbalance of Qi, blood, Yin, and Yang in the body, loss of support for the heart, loss of possession of the mind, or tangible solid evil blocking the heart pulse and loss of support for the mind. The occurrence of CN is closely related to the five organs. Tietao Deng [23], a master of TCM, believes that CN is most closely related to the spleen. The methods of regulating the spleen, protecting the heart, tonifying Qi, and removing phlegm are often used to treat the disease. Professor Shi [24] believes that middle-aged women are prone to this disease, which is related to the theory that women are blood-based and that women are born with depression. He believes that the pathogenesis of CN is usually blood deficiency and liver depression. Professor Xian [25] believes that the occurrence of CN is also related to the brain and connected with the heart and brain and advocates the treatment of "simultaneous treatment of heart and brain." Professor Meng [26] believes that the disease is closely related to "Qi depression" and "blood stasis," and Xuefu Zhuyu decoction is often used for treatment.

A number of clinical trials have shown that TCMD, as a traditional Chinese medicine dosage form, can significantly improve the clinical symptoms of patients with CN and has certain advantages in the treatment of CN. Therefore, it is of practical significance to explore the systematic evaluation of TCMD on the curative effect of CN. TCMD represented by *Bupleurum* and longbone oyster decoction, *Bupleurum* Shugan powder, Xiaoyao Powder, Ganmai Dazhao Decoction, and Guipi Decoction are mostly used in the treatment of CN with remarkable curative effect. Moreover, pharmacological studies on TCMD (e.g., Shugan Ningxin Decoction, Chaihu Guizhi Longgu oyster decoction, Jieyu Decoction, etc.) have shown that they have tranquilizing, anticonvulsant, and reducing skeletal muscle excitability effects, which is closely related to the effective treatment of CN [27].

And through the analysis of the 10 literature studies on the treatment of CN included in this study, it was found that 55 kinds of traditional Chinese medicines were used, with a total frequency of 125 times. Among them, *Angelica sinensis*, *Poria cocos*, *Polygala tenuifolia*, Wild jujube kernel, and *Bupleurum* were the most frequently used TCMs. CN is located in the heart and is closely related to the liver, spleen, and kidney. The pathogenesis is the loss of the heart and liver, the depression of the liver and the deficiency of the spleen, or the deficiency of the heart and liver yin, and the deficiency of the liver and kidney yin. The treatment should be based on soothing the liver and strengthening the spleen, nourishing the heart, and calming the mind. If the blood of the heart is blocked, it will lead to chest tightness, chest pain, and palpitation. If the heart is in charge of the spirit, it will lead to worry and anxiety. The liver is in charge of catharsis and regulating emotions. The heart and liver are closely related to mental and emotional diseases while *Angelica sinensis* belongs to the liver, heart, and spleen meridians and has the effect of supplementing blood and activating blood circulation. Modern pharmacological studies have proved that *Angelica sinensis* has the effects of regulating immunity [28], anti-inflammation [29], and promoting blood circulation [30] and has good therapeutic effects on the symptoms of CN such as chest tightness, chest pain, palpitation, and anxiety. *Bupleurum* can soothe the liver and relieve depression, directly reach Shaoyang, help the operation of the cardinal machine, and make the Fu Qi smooth and the spirit tranquil. It has a significant effect in the clinical treatment of sleep disorders and depression. Experimental pharmacological studies have found that *Poria cocos* and Wild jujube kernel play an antianxiety role by making the neuroendocrine-immune regulatory network reach a steady state, while *Poria cocos*, *Polygala tenuifolia,* and Wild jujube kernel nourish the blood, regulate the liver, nourish the heart, and calm mind. In modern clinical applications, they can significantly improve symptoms such as palpitation, insomnia, and anxiety caused by the deficiency of the heart and liver blood in CN.

Table 3: Frequency of TCMs used in the treatment of CN.

| TCM | Frequency (n) | TCM | Frequency (n) | TCM | Frequency (n) | TCM | Frequency (n) |
|---|---|---|---|---|---|---|---|
| *Angelica sinensis* | 6 | *Calamus* | 3 | Rehmannia glutinosa | 2 | Mother of pearl | 1 |
| *Poria cocos* | 6 | Licorice | 3 | Dried tangerine peel | 2 | Gardenia | 1 |
| *Polygala tenuifolia* | 6 | Calcined oyster | 3 | Dalbergia odorifera | 2 | Perilla stem | 1 |
| Wild jujube kernel | 6 | Curcuma | 3 | Raw dragon teeth | 2 | Pueraria lobata | 1 |
| *Bupleurum* | 6 | Pinellia ternata | 3 | Cinnamomum cassia | 1 | Bletilla striata | 1 |
| White peony | 5 | *Cassia* twig | 2 | *Morinda* officinalis | 1 | Magnet | 1 |
| Chuanxiong | 4 | Rhizoma Anemarrhenae | 2 | Motherwort | 1 | Zhu Ru | 1 |
| Gan song | 4 | Codonopsis pilosula | 2 | Phellodendron amurense | 1 | Fructus aurantii | 1 |
| *Astragalus membranac-eus* | 3 | Albizzia bark | 2 | Radix polygoni | 1 | Red ochre | 1 |
| *Coptis chinensis* | 3 | Figwort | 2 | Cohosh | 1 | Festuca arundinacea | 1 |
| *Ophiopogon japonicus* | 3 | Cypress seed | 2 | Scutellaria baicalensis | 1 | Epimedium | 1 |
| *Schisandra chinensis* | 3 | Ginseng | 2 | *Asparagus* sprengeri | 1 | Amber powder | 1 |
| *Salvia miltiorrhiza* | 3 | Chinese bellflower | 2 | Rhizoma cyperi | 1 | Cinnabar | 1 |
| Fu Shen | 3 | Peony bark | 2 | Mint | 1 | — | — |

Table 4: Classification frequency of TCMs used in the treatment of CN.

| Category of TCM | TCM | Frequency (n) | Proportion (%) |
|---|---|---|---|
| Antidote drugs | *Bupleurum*, cassia twig, cohosh, mint, pueraria lobata, perilla stem | 12 | 9.6 |
| Antipyretic drugs | *Coptis chinensis*, rhizoma anemarrhenae, rehmannia glutinosa, Figwort, peony bark, scutellaria baicalensis, gardenia, phellodendron amurense | 14 | 11.2 |
| Diuretic and hygroscopic drugs | *Poria cocos*, fu shen | 9 | 7.2 |
| Warming interior drugs | *Cinnamomum cassia* | 1 | 0.8 |
| Qi regulating drugs | Rhizoma nardostachyos, Dalbergia odorifera, Dried tangerine peel, Rhizoma Cyperi, Fructus aurantii | 10 | 8.0 |
| Hemostatics | Bletilla striata | 1 | 0.8 |
| Promoting blood circulation and removing blood stasis drugs | Chuanxiong, Salvia miltiorrhiza, Curcuma, Motherwort | 11 | 8.8 |
| Antitussive and antiasthmatic drugs for resolving phlegm | Pinellia ternata, Platycodon grandiflorum, Zhu Ru | 6 | 4.8 |
| Calming liver and wind drugs | Calcined oyster, Mother of Pearl, Red ochre | 5 | 4.0 |
| Tonic medicine | Chinses Angelica, Radix paeoniae Alba, Astragalus membranac-eus, Radix liquiritiae、Ophiopogon japonicus, Codonopsis pilosula, Ginseng, Festuca arundinacea、Epimedium, Radix asparagi, Morinda officinalis, Radix polygoni multiflori | 29 | 23.2 |
| Tranquilizer | Wild jujube kernel, High aspiration, Albizzia bark, Cypress seed, Raw dragon teeth, Magnet, Amber powder, Cinnabar | 21 | 16.8 |
| Resuscitation medicine | Calamus | 3 | 2.4 |
| Astringent medicine | Schisandra chinensis | 3 | 2.4 |

This study finally included 10 papers with 686 patients, 349 in the treatment group, of which 131 were males and 218 were females, and 337 in the control group, of which 131 were males and 206 were females. 9 of the papers [9–17] mentioned the specific randomization method, 1 paper [8] did not describe it, and all of them did not mention the blinding method used, allocation concealment, lost visits, and withdrawal; 1 paper [8] selectively reported the study results; and 3 papers [8, 11, 13] reported adverse effects. Meta-analysis showed that CN, treated with herbal tonics, significantly improved palpitations compared with the control group ($MD = 0.78$, 95% $CI = 0.55$–$1.01$, $P < 0.00001$), chest tightness/chest pain ($MD = 0.53$, 95% $CI = 0.10$–$0.97$, $P < 0.05$), shortness of breath symptoms ($MD = 0.60$, 95% $CI = 0.26$–$0.93$, $P = 0.0005$), and the TCM symptom score ($MD = 5.91$, 95% $CI = 4.32$–$7.49$, $P < 0.00001$), reduced resting heart rate ($MD = 13.21$, 95% $CI = 9.01$–$17.40$, $P < 0.00001$), and reduced depression and anxiety symptoms. [SDS ($MD = 7.90$, 95% $CI = 4.98$–$10.83$, $P < 0.00001$), SAS ($MD = 6.55$, 95% $CI = 4.25$–$8.86$, $P < 0.00001$), HAMD ($MD = 4.46$, 95% $CI = 3.00$–$5.92$, $P < 0.00001$), HAMA ($MD = 3.35$, 95% $CI = 1.85$–$4.85$, $P < 0.00001$)], all with statistically significant differences. According to the analysis of this study, TCMD has a significant effect on improving the common clinical symptoms, depression, and anxiety of CN.

*4.1. Limitations.* There are some limitations that should be noted. To begin with, due to the high risk of performance bias and detection bias, unclear risk of selection bias, and reporting bias, we only got relatively low-grade evidence for TCMD in the treatment of CN complicated with depression and anxiety, which means further research is very likely to have an important impact on our confidence in the estimate of effects and is likely to change the estimate. What is more, the sample size of the papers was small, and there was a lack of evaluation indicators such as safety analysis and quality of life analysis. Finally, because CN is mainly manifested in physical symptoms and lacks clear laboratory index evidence, we had to evaluate the effectiveness of TCMD in the treatment of CN from the results of TCM syndrome scores and psychological scale scores. Accordingly, further validation of the effectiveness of TCMD in the treatment of CN through large sample, multicenter, scientifically designed, and rigorously implemented clinical trials are still needed in the future.

## 5. Conclusion

In conclusion, TCMD mainly composed of tonic and tranquilizing drugs could significantly improve the clinical symptoms of cases with CN and reduce heart rate, anxiety, and depression scores. However, the evidence strength of the research results was limited by the quality of the included literature, and more high-quality clinical trials are still needed for further verification.

## Data Availability

The data used to support the findings of the study are available at https://www.crd.york.ac.uk/PROSPERO/display_record.php?RecordID=312164.

## Conflicts of Interest

The authors declared that they have no conflicts of interest in this work.

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