# Original Article Effect of traditional Chinese medicine external therapy for functional constipation: a meta-analysis

Lianmei Yan<sup>1\*</sup>, Hua Liu<sup>3\*</sup>, Ruofen Yan<sup>2</sup>, Lili Tan<sup>1</sup>, Jiping Tan<sup>2</sup>, Yunhong Lei<sup>4</sup>

Departments of <sup>1</sup>Acupuncture and Massage, <sup>2</sup>Nursing, National Hospital of Enshi Tujia and Miao Autonomous Prefecture, Enshi 445000, Hubei, China; <sup>3</sup>Ministry of Science and Education, National Hospital of Enshi Tujia and Miao Autonomous Prefecture, Enshi 445000, Hubei, China; <sup>4</sup>Department of Nursing, Hubei Enshi College, Enshi 445000, Hubei, China. \*Equal contributors and co-first authors.

Received July 15, 2022; Accepted November 5, 2022; Epub January 15, 2023; Published January 30, 2023

Abstract: Objective: To systematically review the effectiveness and safety of external treatment with traditional Chinese medicine in patients with functional constipation. Methods: In this meta-analysis study, we searched for randomized controlled trials (RCTs) on traditional Chinese medicine (TCM) external therapy for treating functional constipation from various databases. Search time was from database establishment to May 2022. The included studies were evaluated for meta-analysis using RevMan 5.3 software. Results: A total of 18 randomized controlled studies were included, including 1404 patients. Results showed the total effective rate [OR = 3.83, 95% CI (2.71, 5.43), P < 0.01] and quality of life [OR = -9.78, 95% CI (-12.32, -7.23), P < 0.01] effectively improved after TCM external therapy; constipation symptoms [OR = -1.64, 95% CI (-2.31, -0.96), P < 0.01] reduced; defecation time [OR = -0.68, 95% CI (-0.99, -0.37), P < 0.01] shortened and spontaneous complete bowel movements (SCBM) [OR = 0.48, 95% CI (0.01, 0.95), P < 0.05] increased; and recurrence rate [OR = 0.25, 95% CI (0.17, 0.38), P < 0.01] reduced. The results of a subgroup analysis of the types of TCM treatment showed acupoint catgut embedding [OR = 3.04, 95% CI (1.10, 8.41), P < 0.05], acupoint application [OR = 3.46, 95% CI (1.74, 6.89), P < 0.01], manipulation [OR = 4.26, 95% CI (0.81, 22.53), P > 0.05], the combination of two external treatment methods [OR = 7.73, 95% CI (3.00, 19.91), P < 0.01], acupuncture [OR = 3.09, 95% CI (1.21, 7.85), P < 0.05], and other external therapies [OR = 3.58, 95% CI (1.89, 6.80), P < 0.01] had certain value in treating functional constipation. Conclusions: TCM external therapy has good clinical efficacy in treating functional constipation (FC) patients, which can improve main treatment efficacy and life quality, reduce constipation symptoms, shorten defecation time and SCBM, and reduce the recurrence rate. This therapy has no adverse reaction and can be widely applied in clinical practice.

**Keywords:** TCM external therapy, functional constipation, quality of life, defecation time, meta-analysis, randomized controlled trial

#### Introduction

As a functional intestinal disease, difficulty defecating, decreased bowel time, and feeling of incomplete bowel movements are the main manifestations of functional constipation (FC). Although clinical manifestations vary greatly among individuals, the main symptoms include decreased defecation times (< 3 times/week), dry and hard stool, and defecation difficulties. The latter includes laborious defecation, difficulty in defecation, a feeling of incomplete defecation, and time-consuming defecation. It is accompanied by abdominal distension, abdominal pain, and other discomforts. In severe cases, manual-assisted defecation is required. It is also common among middle-aged and young people. Long-term constipation can cause anorectal diseases such as anal fissures, hemorrhoids, and polyps, increase the risk of intestinal tumors, cause adverse emotions (anxiety, depression), affect the life quality of the patients, induce cardiovascular and cerebrovascular diseases, and even cause death due to defecation difficulties [1]. FC is mainly divided into four types: slow transit constipation (STC), defecatory disorders (DD), mixed constipation (MC), and normal transit constipation (NTC) [2]. The incidence rate of chronic constipation in Americans is about 10-12%, while it is 14% in Asians. Its prevalence in China is about 3-11% [3]; specifically, in Beijing and Hangzhou, it is 6.07% and 17.6%, respectively [4, 5]. The incidence rate in women is higher than that in men [6]. Therefore, treating FC early can greatly reduce the adverse consequences and social burden.

According to Traditional Chinese Medicine (TCM), constipation develops due to dysfunction in the Zang-Fu organs (including the large intestine, which conducts dross and transports body fluids). Doctors who practiced TCM described the manifestations and signs of FC as "Impeded Constipation", "Splenoasthenic Constipation", "Yang Constipation", "Yin Constipation", etc. The disease occurs in the large intestine and is connected to the liver, lungs, spleen, stomach, and kidneys. The liver governs catharsis and regulates Qi. The dialectic of Qi, blood & body fluid, believes that Qi deficiency results in motility weakness, whereas blood deficiency leads to insufficient body fluid. The disease develops because the large intestine is not nourished well. The principle of TCM in treating constipation is "to make it unobstructed and smooth".

In western medicine, the disease is treated symptomatically in most cases. Doctors apply laxatives, lubricants, and gastrointestinal motility-promoting medicines, recommend patients change their eating habits and monitor their psychology, physiology, and behavior. The above treatments can alleviate pain and discomfort for patients with long-term chronic constipation. However, problems such as strong adverse reactions, strong drug dependence, and easy recurrence also occur, which are difficult to solve. In recent years, several studies on TCM have investigated the clinical problems of FC. Furthermore, TCM external therapy is widely used because of its simple operation and strong curative effect. The characteristic treatments, which include acupuncture, massage, acupoint catgut embedding, acupoint application, enema, and TCM ironing, have certain advantages in treating the disease. They are widely used in the clinic (such as acupoint application and acupuncture) because of their good curative effect, low toxic and side effects, low

cost, and convenient practice [7, 8]. To further evaluate the efficacy of the application, we systematically evaluated and analyzed the clinical studies on TCM external therapy for treating FC. This study might provide a theoretical basis for clinical practice.

# Data and methods

# Data source and retrieval strategy

In this meta-analysis, data retrieval was conducted according to the strategy of PICOS (population intervention comparison outcome studies). We searched for randomized controlled trials (RCTs) on TCM external therapy for the treatment of FC in CNKI, Wanfang, VIP, CBM, PubMed, Embase, Cochrane Library, and Web of Science databases by computer retrieval, which was supplemented by manual retrieval. Search time was from database establishment to May 20, 2022. The keywords were "functional constipation/habitual constipation/constipation", "TCM external therapy/massage/kneading/manipulation/moxibustion/auricular beanpressing therapy/acupoint application/external ironing/TCM enema/cupping/acupuncture/acupoint catgut embedding", etc. The English keywords were functional constipation/habitual constipation/constipation, external treatment of Chinese medicine/massage/manipulation/tuina therapy/knead/foulage/moxibustion/auricular pressure/ear auricular pressure treatment/auricular bean-embedding therapy, etc. Through the combined retrieval of subject words and free words, we retrieved studies from Chinese and English databases. The title, abstract, and full text of relevant studies were extracted; the title and abstract of relevant studies were read: the selected studies were included based on the inclusion & exclusion criteria; some studies were eliminated after reading the full text. For example, in CNKI, the search expression used was "functional constipation" or "habitual constipation" or "constipation and TCM external therapy" or "massage" or "kneading" or "manipulation" or "moxibustion" or "auricular beanpressing therapy" or "acupoint application" or "external ironing" or "TCM enema" or "cupping" or "acupuncture" or "acupoint catgut embedding".

# Criteria

Inclusion criteria: (1) It was a randomized controlled study; (2) The subjects were FC patients; (3) The research method of the experimental group was mainly TCM external therapy, and routine symptomatic treatment methods were used in the control group, such as oral medicine and glycerin enemas; (4) The main outcome index was the total effective rate, life quality, stool form score, symptom scores, spontaneous complete bowel movements (SC-BM) (refers to the number of times that can be achieved without medication or other auxiliary means, and there was a sense of exhaustion), defecation time, recurrence rate, and adverse reactions: (5) The diagnostic criteria of TCM or Western medicine were mentioned, such as the Rome III diagnostic criteria.

*Literature exclusion criteria:* (1) Repeatedly published literature; (2) Literature without clear diagnostic criteria or clear outcome indices; (3) The full text could not be downloaded due to database restrictions, or the author could not be contacted to obtain information.

#### Literature screening and data extraction

Two researchers searched literature strictly following the retrieval strategy, extracted qualified studies according to criteria, and screened them after reading the full text. When disagreements arise, the third researcher makes the final decision. A unified data extraction form was used to input information, including author name, publish year, number of samples, gender, age, intervention measures, control-group measures, course of treatment, and efficacy indices.

# Literature quality evaluation

We used the quality evaluation tool [9] recommended by the Cochrane Collaboration Network (www. cochrane.org) to rate the studies based on biases. If there was any difference, it was evaluated by the third party and finally decided.

# Evaluation of the quality of the included studies

Eighteen RCT studies were finally included. (1) Random grouping: five studies [11, 14, 15, 18,

20] mentioned the random number table method; two studies [10, 22] were numbered according to the order of treatment and then grouped according to the random number table method; and one study [23] used the random envelope method. Nine studies were low risk. Other studies did not describe the random method and were rated as an unknown risk. (2) Random concealment: one study [14] followed the double-blinding method, performed envelope concealment, and was rated as low risk; Other studies that did not mention blinding depictions and allocation concealment were treated as unknown risks. (3) The blinding method for subjects: one study [14] mentioned double-blinding with a detailed description: low risk; the other studies did not use the blinding method: high risk. (4) The blinding method for outcome measurers: none of the studies mentioned this, and it was rated as an unknown risk. (5) Data integrity: seven studies [10, 11, 13, 14, 18, 20, 23] reported 30 drop-out and lost-to-follow-up cases and explained the reasons. There was no data loss in other studies; thus, they were rated as low risk. (6) Other bias: it was not mentioned in all studies. The details are shown in Figure 2.

# Statistical methods

Rev Man 5.3 software was used to analyze the data, and the heterogeneity of studies was determined by performing the X<sup>2</sup> test and the I<sup>2</sup> quantitative analysis. The mean difference (MD) and odd's ratio (OR) were used for continuous variables and classified variables, respectively, and the test criterion was  $\alpha$  = 0.05. The results were tested for heterogeneity. When P was > 0.1 and  $I^2$  was < 50%, the heterogeneity was acceptable, and the fixed-effects model was selected for meta-analysis. When P was < 0.1 and I<sup>2</sup> was > 50%, there was high heterogeneity among studies. When the data were clinically judged, it was necessary to merge the studies because there was consistency among the studies and selected random-effects models for performing a meta-analysis. When P was < 0.1, the source of heterogeneity was judged and only descriptive analysis was performed.

# Results

# The included studies

1,642 studies were included after excluding the repeatedly published studies. After brows-



**Figure 1.** A flowchart of the retrieval of studies on traditional Chinese medicine (TCM) external therapy for functional constipation (FC).

ing the title, abstract, and full text, the studies with irrelevant topics and inconsistent intervention measures were excluded, and then the full text was carefully read. Finally, 18 RCTs were included [10-27] (Figure 1). Basic characteristics are shown in Table 1.

# Diagnosis and efficacy criteria

Regarding the diagnostic criteria of Western medicine, nine studies [10, 12, 14-16, 18, 23, 25, 26] used the Rome III criteria, five studies [13, 14, 19, 21, 22] used the Rome II criteria [28, 29], and one study [22] used references for diagnosis. Regarding the diagnostic criteria of TCM, six studies [11, 13, 15, 18, 21, 23] used the *TCM Syndrome Diagnosis & Efficacy Criteria* [30]. Among them, three studies [11, 15, 18] simultaneously adopted the diagnostic criteria, of which three studies [24-26] did not mention the source. One study [11] used the Rome III

diagnostic criteria, one study [18] used the *TCM Clinical Syndrome Diagnosis & Efficacy Criteria*, eight studies [10, 14, 15, 17, 18, 20, 21, 23] used The Guiding Principles for *Clinical Research of New TCM* [31], and five studies [12, 13, 16, 19, 27] used the *TCM Syndrome Diagnosis & Efficacy Criteria*.

#### Results of meta-analysis

Total effective rate: The total effective rate was used for all the efficacy evaluation indices of the included studies. There were 1,404 patients, the experimental group had 711 cases (660 effective cases) and the control group had 693 cases (547 effective cases). The heterogeneity test showed that P = 0.94 and  $I^2 = 0\%$ , hence, the fixed-effects model was selected. TCM external therapy can effectively treat FC and improve its total effective rate ([OR = 3.83, 95%

CI (2.71, 5.43), P < 0.01]; Figure 3). Additionally, subgroup analysis results showed differences in acupoint catgut embedding [OR = 3.04, 95%] CI (1.10, 8.41), P < 0.05], acupoint application [OR = 3.46, 95% CI (1.74, 6.89), P < 0.01], manipulation [OR = 4.26, 95% CI (0.81, 22.53), P > 0.05], the combination of two external treatment methods [OR = 7.73, 95% CI (3.00, 19.91), P < 0.01], acupuncture [OR = 3.09, 95% CI (1.21, 7.85), P < 0.05], and other external treatment methods [OR = 3.58, 95% CI (1.89, 6.80), P < 0.01, suggesting that the above TCM external therapy (except manipulation) can improve total effective rate, and the use of two or more external treatment methods was better than a single one. The results are shown in Figure 4.

PAC-QOL: Three studies [10, 16, 25] mentioned the PAC-QOL. Heterogeneity test indicated P = 0.02,  $I^2 = 75\%$ ; thus, the random-effects model was selected. The results showed OR = -9.78, 95% CI (-12.32, -7.23), P < 0.01, suggesting



of included studies.

that TCM external therapy can improve life quality of FC patients effectively. The results are shown in Figure 5.

Bristol stool form score: Ten studies [10, 12, 13, 15, 18, 20-23, 25] mentioned the Bristol stool form score. The heterogeneity test showed that P < 0.01,  $I^2$  = 97%; thus, the randomeffects model was applied. The results showed OR = -0.45, 95% CI (-0.94, 0.04), P > 0.05, suggesting that TCM external therapy had no significant effect on improving stool form of FC patients. The results are shown in Figure 6.

Symptom scores: Eight studies [10, 13-15, 20-22, 26] mentioned the symptom scores.

The heterogeneity test results showed that P < 0.01 and  $I^2 =$ 95%, therefore, the randomeffects model was selected. The results showed OR = -1.64. 95% CI (-2.31, -0.96), P < 0.01, suggesting that TCM external therapy can improve the symptom scores of FC patients. The results are shown in Figure 7.

SCBM: Three studies [10, 21, 25] mentioned SCBM. The heterogeneity test results showed that P = 0.01,  $I^2 = 77\%$ , so the random-effects model was selected. And the results showed OR = 0.48, 95% CI (0.01, 0.95), P < 0.05, suggesting that TCM external therapy can improve SCBM of FC patients. The results are shown in Figure 8.

Defecation time: Five studies [12, 13, 18, 20, 25] mentioned defecation time. The heterogeneity test results showed that P < -0.01,  $I^2 = 85\%$ , so the random-effects model was selected. Results showed OR = -0.68, 95% CI (-0.99, -0.37), P < 0.01, suggesting that TCM external therapy can shorten the defecation time of FC patients. The results are shown in Figure 9.

Recurrence rate: Seven studies [12, 16, 21, 22, 24, 26, 27] mentioned the recurrence rate. Heterogeneity test showed P > 0.05,  $I^2 = 46\%$ , so the fixed-effects model was selected. The results were OR = 0.25, 95% CI (0.17, 0.38), P < 0.01, suggesting that TCM external therapy can reduce the recurrence rate of FC patients. The results are shown in Figure 10.

Adverse reactions: Five studies [11, 14, 20, 21, 26] mentioned adverse reactions. The heterogeneity test results showed that P < 0.01,  $I^2 =$ 82%, so we selected random-effects model. The results were OR = -0.03, 95% CI (-0.09, 0.04), P > 0.05, suggesting that TCM external therapy did not have any other effects than

	Experimental			Control			_	
Included literature	Intervention measures	Number of cases (F/M)	Age (years)	Intervention measures	Number (cases)	Age (years)	Course of treatment	Efficacy indexes
Zhai Dong 2018 [10]	Catgut embedding at eight acupoints	25 (11/16)	70.28±4.99	Lactulose group	27 (12/13)	70.96±5.45	56 d	12345
Wang Junli 2013 [11]	Abdominal acupoint application	30 (13/17)	72.1±1.41	Phenolpthalein tablets	30 (12/18)	71.9±1.41	7 d	1 7
Wang Jun 2017 [12]	Herbs-partition moxibusition	36 (16/20)	67.36±4.23	Cisapride	36 (15/21)	67.84±3.15	21 d	1368
Wu Shuwen 2009 [13]	Jin's three-needle therapy	32 (12/20)	64.7±10.6	Conventional body acupuncture	30 (13/17)	65.8±11.3	12 d	1346
Gao Dongmei 2019 [14]	Tongbian Shenque acupoint application	71 (37/34)	78.12±8.87	Routine nursing	69 (35/34)	79.09±8.39	28 d	(1) $(4)$ $(7)$
Wang Juanjuan 2015 [15]	Warming-needling moxibustion	32 (18/14)	> 60	Routine nursing	32 (17/15)	> 60	42 d	1 3 4
Zeng Xuezhen 2019 [16]	Xiaochengqi decoction retention enema	30 (15/15)	60-80	Glycerine enema	30 (15/15)	60-80	3 d	128
Jiang Yang 2012 [17]	Acupoint application	45 (35/10)	61-85	Danhuang pill	45 (30/15)	64-88	7 d	19
Guo Qi 2014 [18]	Shu-Mu point embedding	32 (18/14)	74.44±7.67	Polyethylene glycol 4000 powder	32 (17/15)	73.00±6.68	56 d	136
Jin Haizhen 2014 [19]	Acupuncture	24 (14/10)	> 60	Maren Runchang pill	24 (17/7)	> 60	15 d	1 8
Yong Hui 2018 [20]	Acupoint catgut embedding	30 (13/17)	18-70	Liqi Daozhi decoction	30 (14/16)	18-70	28 d	(1) $(3)$ $(4)$ $(6)$ $(7)$
Cheng Yanwen 2010 [21]	Tongbian plaster	60 (25/35)	29-76	Maren soft capsule	60 (26/34)	29-76	14 d	13457
Chao Guodong 2017 [22]	Mijiandaofang suppository	47 (22/25)	73.59±3.17	Glycerine enema	40 (24/16)	73.42±3.17	7 d	1 3 4 8
Cao Zhi 2018 [23]	Manipulation combined application	33 (17/16)	1.39±20.41	Manipulation	33 (17/16)	36.18±4.2	60 d	1 3
Gao Yonglian 2011 [24]	Acupoint application + acupoint massage	45 (27/18)	65-72	Routine nursing	36 (20/16)	65-72	28 d	1 8
Ma Yufen 2020 [25]	Acupoint application of TCM	60 (22/38)	69.08±7.15	Qirong Runchang oral liquid	60 (24/36)	68.71±6.53	5 d	12356
Ye Min 2020 [26]	Massage + auricular bean-pressing therapy + five-element music	50 (34/16)	9.13±2.54	Lactulose group	50 (31/19)	9.26±2.39	6 d	1478
Chen Yongfeng 2011 [27]	Abdominal massage therapy	30 (6/24)	58.9±5.6	Oral phenolphthalein tablets	30 (7/23)	58.5±6.1	10 d	1 8

# Table 1. General literature data for FC treated with TCM external therapy

Outcome indexes: ①: total effective rate; ②: quality of life of the patients; ③: stool form score; ④: symptom scores; ⑤: SCBM; ⑥: defecation time; ⑦: adverse reactions; ⑧: recurrence rate.

	Experim	ental	Contr	ol		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% Cl	M-H, Fixed, 95% Cl
Cao Zhi 2018	30	32	27	32	4.8%	2.78 [0.50, 15.52]	
Chao Guodong 2017	42	47	25	40	8.2%	5.04 [1.63, 15.55]	
Chen Yongfeng 2011	28	30	23	30	4.4%	4.26 [0.81, 22.53]	
Cheng Yanwen 2010	57	60	50	60	7.1%	3.80 [0.99, 14.58]	
Gao Dongmei 2019	68	71	62	69	7.6%	2.56 [0.63, 10.33]	
Gao Yonglian 2011	40	45	14	36	4.9%	12.57 [4.00, 39.54]	
Guo Qi 2014	31	32	27	32	2.4%	5.74 [0.63, 52.23]	
Jiang Yang 2012	36	45	23	45	13.1%	3.83 [1.50, 9.75]	
Jin Haizhen 2014	23	24	20	24	2.4%	4.60 [0.47, 44.60]	
Ma Yufen 2020	60	60	57	60	1.3%	7.37 [0.37, 145.75]	
Wang Juanjuan 2015	30	32	24	32	4.3%	5.00 [0.97, 25.77]	
Wang Jun 2017	32	36	29	36	9.2%	1.93 [0.51, 7.28]	
Wang Junli 2013	28	30	25	30	4.7%	2.80 [0.50, 15.73]	
Wu Shuwen 2009	28	32	24	30	8.8%	1.75 [0.44, 6.94]	
Ye Min 2020	50	50	50	50		Not estimable	
Yong Hui 2018	29	30	27	30	2.6%	3.22 [0.32, 32.89]	
Zeng Xuezhen 2019	27	30	21	30	6.0%	3.86 [0.93, 16.05]	
Zhai Dong 2018	21	25	19	27	8.3%	2.21 [0.57, 8.54]	
Total (95% CI)		711		693	100.0%	3.83 [2.71, 5.43]	•
Total events	660		547				
Heterogeneity: Chi <sup>2</sup> = 8.	32, df = 16	(P = 0.9	94); I <sup>2</sup> = 0 <sup>4</sup>	%			
Test for overall effect: Z	= 7.56 (P <	0.0000	1)				0.01 0.1 1 10 100 Equate (control) Equation (constitution)
			-				Favours (control) Favours (experimental)

Figure 3. Forest plot of total effective rate for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

assisted defecation in reducing adverse reactions of FC patients. The results are shown in **Figure 11**.

#### Publication bias and sensitivity analysis

The RevMan 5.3 software was used to plot the funnel chart of the two effect indices (i.e., the total effective rate, and the subgroup analysis). The funnel charts were incompletely symmetrical, suggesting that there might be a risk of publication bias. The causes might be that the sample size was too small, the included quality of most studies was low, and negative results might be concealed and unpublished. We then used the single-elimination literature study method and meta-analyzed the remaining studies. Overall outcome-index statistical analysis has no change, suggesting that this study was relatively stable. The results are shown in **Figures 12** and **13**.

#### Discussion

#### Overview of TCM external therapy

TCM external therapy is a method characterized by highlighting the "external treatment of traditional Chinese medicine", which includes more than 100 therapeutic methods, such as acupuncture, massage, fumigation and washing, acupoint application, plaster, umbilical therapy, pedicure, auricular therapy, TCM ironing, acupoint catgut embedding, and physical therapy. These methods were mainly divided into four categories: overall treatment; skin, orifice, and mucous membrane treatment; meridian and acupoint treatment; other treatments. TCM external therapy can treat and prevent diseases by following the basic principles of TCM and using the penetration-promoting effect of medicines. The treatment scope covers internal medicine, surgery, gynecology, pediatrics, orthopedics, traumatology, dermatology, ophthalmology, otorhinolaryngology, and anorectal problems. Compared to internal therapy, it was characterized by "achieving the same goal in different ways". It might have unique curative effects on "patients who refuse to take medicine or cannot take medicine", especially those patients with critical diseases. Therefore, "good doctors could not ignore TCM external therapy".

# TCM external therapy on the total effective rate in FC patients

As a common clinical syndrome, FC was classified as a functional gastrointestinal disease.

	Experime	ental	Contro	ol		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% Cl	M-H, Fixed, 95% Cl
1.2.1 Acupoint catgut e	mbedding						
Guo Qi 2014	31	32	27	32	2.4%	5.74 [0.63, 52.23]	
Yong Hui 2018	29	30	27	30	2.6%	3.22 [0.32, 32.89]	
Zhai Dong 2018	21	25	19	27	8.3%	2.21 [0.57, 8.54]	
Subtotal (95% CI)		87		89	13.3%	3.04 [1.10, 8.41]	-
Total events	81		73				
Heterogeneity: Chi <sup>2</sup> = 0.	53, df = 2 (F	P = 0.77	); I² = 0%				
Test for overall effect: Z	= 2.15 (P =	0.03)					
122 Acunoint applicati	ion						
Gao Dongmoi 2019	0.0	71	62	60	7 6 94	2 5 6 10 2 3 01 2 3 1	
liang Vang 2012	36	45	22	15	13.1%	3 83 [1 50 9 75]	
Ma Yufen 2012	50 60	60	57	60	13.1%	7 37 10 37 145 75	
Wana Junii 2013	28	30	25	30	1.3%	2 80 10 50 15 73	
Subtotal (95% CI)	20	206	20	204	26.7%	3.46 [1.74, 6.89]	•
Total events	192	200	167		2011/1		
Heterogeneity: Chi <sup>2</sup> = 0	53 df = 3 (F	P = 0.91	): P= 0%				
Test for overall effect: Z:	= 3.54 (P =	0.0004	)				
	0.010		, ,				
1.2.3 Manipulation							
Chen Yongfeng 2011	28	30	23	30	4.4%	4.26 [0.81, 22.53]	
Ye Min 2020	50	50	50	50		Not estimable	
Subtotal (95% CI)		80		80	4.4%	4.26 [0.81, 22.53]	
Total events	78		73				
Heterogeneity: Not appl	icable						
Test for overall effect: Z	= 1.71 (P =	0.09)					
1.2.4 Combination of tw	o external	treatm	ent meth	ods			
Cao Zhi 2018	30	32	27	32	4.8%	2.78 [0.50, 15.52]	
Gao Yonglian 2011	40	45	14	36	4.9%	12.57 [4.00, 39.54]	
Subtotal (95% CI)	70	11		68	9.7%	7.73 [3.00, 19.91]	
l otal events	/U		41	,			
Heterogeneity: Chi*= 2.	U5,01=1 (H	' = 0.15 0.0004/	); F= 519	6			
Test for overall effect. Z :	= 4.24 (P <	0.0001;	)				
125 Acupuncture							
lin Hoizhon, 2014	22	24	20	24	2.4%	4 60 10 47 44 601	
Wang Juaniuan 2014	20	24	20	29	1 206	4.00 [0.47, 44.00] 5.00 [0.97, 25.77]	
Wang Suanjuan 2013 Wu Shuwen 2009	28	32	24	30	9.3%	1 75 10 44 6 941	
Subtotal (95% CI)	20	88	24	86	15.5%	3.09 [1.21, 7.85]	◆
Total events	81	00	68		101070	0.000 [ 112 1, 1100]	-
Heterogeneity: Chi <sup>2</sup> = 1	10 df=2(P	P = 0.58	): P= 0%				
Test for overall effect: Z:	= 2.36 (P =	0.02)	// 0.0				
	(-	,					
1.2.6 Other external tre	atment me	thods					
Chao Guodong 2017	42	47	25	40	8.2%	5.04 [1.63, 15.55]	
Cheng Yanwen 2010	57	60	50	60	7.1%	3.80 [0.99, 14.58]	
Wang Jun 2017	32	36	29	36	9.2%	1.93 [0.51, 7.28]	
Zeng Xuezhen 2019	27	30	21	30	6.0%	3.86 [0.93, 16.05]	
Subtotal (95% CI)		173		166	30.4%	3.58 [1.89, 6.80]	
Total events	158		125				
Heterogeneity: Chi <sup>2</sup> = 1.	20, df = 3 (F	P = 0.75	); I² = 0%				
Test for overall effect: Z	= 3.90 (P <	0.0001)	)				
T-4-1 (050) OF				0.00	100 00	0.0010 74 5 5	
Total (95% CI)		711		693	100.0%	3.83 [2.71, 5.43]	▼
l otal events	660		547	,			
Heterogeneity: Chi <sup>2</sup> = 8.	32, df = 16	(P = 0.9	4); I* = 09	6			0.002 0.1 1 10 500
lest for overall effect: Z:	= 7.56 (P <	0.0000	1)	c			Favours [control] Favours [experimental]
lest for subaroup differ	ences: Chiª	·= 2.66.	df = 5 (P	= 0.75	n). F = 0%.		

Figure 4. Subgroup analysis of total effective rate for functional constipation (FC) treated with traditional Chinese medicine (TCM) external therapy.

The diagnosis was mainly based on the symptoms of the patients [32]. The clinical manifestations vary greatly among individuals, and the main symptoms include decreased defecation times (< 3 times/week) and defecation difficulties (which cover a broader scope). The latter includes laborious defecation, difficulty in defecation, a feeling of incomplete defecation, and time-consuming defecation. In severe cases, manual-assisted defecation was needed. It was accompanied by abdominal distension, abdominal pain, and other discomforts

	Ехре	rimen	tal	C	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
Ma Yufen 2020	37.73	6.45	60	45.21	6.38	60	33.7%	-7.48 [-9.78, -5.18]	
Zeng Xuezhen 2019	36.17	8.43	30	50.13	6.56	30	22.7%	-13.96 [-17.78, -10.14]	_ <b>-</b> _
Zhai Dong 2018	35.24	1.56	25	44.62	1.86	27	43.7%	-9.38 [-10.31, -8.45]	-
Total (95% CI)		-	115			117	100.0%	-9.78 [-12.32, -7.23]	◆
Heterogeneity: Tau* = Test for overall effect: 2	3.63; Ch Z = 7.54	(P < 0.	(4, df = (00001)	2 (P = ( )	J.02); I	*= 75%	, ,		-20 -10 0 10 20 Favours (experimental) Favours (control)

**Figure 5.** Forest plot of life quality for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

	Experimental Control							Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
Cao Zhi 2018	5.81	0.44	32	8.31	0.72	32	10.2%	-2.50 [-2.79, -2.21]	•
Chao Guodong 2017	0.69	0.55	47	1.54	0.61	40	10.3%	-0.85 [-1.10, -0.60]	•
Cheng Yanwen 2010	0.56	1.19	60	1.52	0.83	60	10.0%	-0.96 [-1.33, -0.59]	+
Guo Qi 2014	0.63	0.49	32	1.57	0.57	32	10.3%	-0.94 [-1.20, -0.68]	+
Ma Yufen 2020	0.47	0.15	60	0.89	0.28	60	10.6%	-0.42 [-0.50, -0.34]	•
Wang Juanjuan 2015	4.14	0.42	32	3.53	0.51	32	10.4%	0.61 [0.38, 0.84]	•
Wang Jun 2017	5.16	1.27	36	4.02	1.71	36	8.8%	1.14 [0.44, 1.84]	
Wu Shuwen 2009	0.87	0.52	32	1.3	0.53	30	10.3%	-0.43 [-0.69, -0.17]	-
Yong Hui 2018	1.6	1.22	30	2.07	1.23	30	9.1%	-0.47 [-1.09, 0.15]	
Zhai Dong 2018	2.6	0.86	25	2.03	0.58	27	9.9%	0.57 [0.17, 0.97]	+
Total (95% CI)			386			379	100.0%	-0.45 [-0.94, 0.04]	•
Heterogeneity: Tau <sup>2</sup> = 0.	59; Chi²	= 347	.06, df:	=9(P <	0.000	01); I² =	97%		-10 -5 0 5 10
Test for overall effect: Z	= 1.79 (F	P = 0.0	7)						Favours [experimental] Favours [control]

Figure 6. Forest plot of Bristol stool form score for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

	Expe	erimen	tal	C	ontrol			Mean Difference	Mean Difference			
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl			
Chao Guodong 2017	0.97	0.52	47	1.35	0.41	40	15.1%	-0.38 [-0.58, -0.18]	•			
Cheng Yanwen 2010	0.48	0.76	60	0.96	0.72	60	14.9%	-0.48 [-0.74, -0.22]	-			
Gao Dongmei 2019	7.52	2.8	71	9.16	3.53	69	11.1%	-1.64 [-2.70, -0.58]				
Wang Juanjuan 2015	1.66	1.99	32	5.42	1.87	32	11.7%	-3.76 [-4.71, -2.81]				
Wu Shuwen 2009	7.8	2.58	32	9.2	2.86	30	9.4%	-1.40 [-2.76, -0.04]				
Ye Min 2020	10.24	2.45	50	16.38	3.94	50	9.8%	-6.14 [-7.43, -4.85]	<b>—</b>			
Yong Hui 2018	1.2	1.45	30	2	1.29	30	13.1%	-0.80 [-1.49, -0.11]				
Zhai Dong 2018	1.56	0.5	25	1.88	0.5	27	14.9%	-0.32 [-0.59, -0.05]	-			
Total (95% CI)			347			338	100.0%	-1.64 [-2.31, -0.96]				
Heterogeneity: Tau <sup>2</sup> = 0	.77; Chi <del>'</del>	= 128	.79, df:	= 7 (P <	0.000	01); I² =	95%		-10 -5 0 5 10			
Test for overall effect: Z	= 4.77 (F	° < 0.0	0001)						Favours [experimental] Favours [control]			

Figure 7. A forest plot of the symptom scores for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

	Experimental Control							Mean Difference	Mean Difference				
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl		IV, F	andom, 95%	CI	
Cheng Yanwen 2010	4.5	1.88	60	3.41	1.11	60	27.2%	1.09 [0.54, 1.64]				-	
Ma Yufen 2020	3.19	0.85	60	3.05	0.81	60	37.4%	0.14 [-0.16, 0.44]			-		
Zhai Dong 2018	2.4	0.64	25	2.03	0.64	27	35.4%	0.37 [0.02, 0.72]					
Total (95% CI)			145			147	100.0%	0.48 [0.01, 0.95]			•		
Heterogeneity: Tau <sup>2</sup> = 0.	13; Chi²	= 8.82	2, df = 2	(P = 0.0	01); I² =	= 77%			-4	-2	ó	2	4
Test for overall effect: Z:	= 2.02 (F	P = 0.0	4)							Favours (co	ntrol] Favour	s [experi	mental]

Figure 8. A forest plot of the spontaneous complete bowel movements (SCBM) for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

	Expe	rimen	ıtal	C	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
Guo Qi 2014	0.63	0.49	32	1.57	0.57	32	22.7%	-0.94 [-1.20, -0.68]	+
Ma Yufen 2020	0.42	0.16	60	0.86	0.25	60	26.5%	-0.44 [-0.52, -0.36]	•
Wang Jun 2017	1.48	1.15	36	2.76	1.31	36	14.2%	-1.28 [-1.85, -0.71]	_ <b>_</b>
Wu Shuwen 2009	1.6	0.54	32	1.8	0.49	30	22.8%	-0.20 [-0.46, 0.06]	
Yong Hui 2018	1.26	1	30	2.13	1.28	30	13.9%	-0.87 [-1.45, -0.29]	
Total (95% CI)			190			188	100.0%	-0.68 [-0.99, -0.37]	•
Heterogeneity: Tau² =	0.09; Cl	hi <b>²</b> = 2	6.95, dt						
Test for overall effect:	Z= 4.26	i (P < 0	0.0001)	Favours [experimental] Favours [control]					

Figure 9. Defecation time for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

	Experim	ental	Contr	ol		Odds Ratio	Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% Cl	M-H, Fixed, 95% Cl
Chao Guodong 2017	7	47	22	40	21.3%	0.14 [0.05, 0.40]	<b>_</b>
Chen Yongfeng 2011	14	30	23	30	12.9%	0.27 [0.09, 0.81]	
Gao Yonglian 2011	5	45	22	36	22.9%	0.08 [0.03, 0.25]	
Jin Haizhen 2014	14	24	19	24	8.3%	0.37 [0.10, 1.32]	
Wang Jun 2017	14	36	19	36	12.2%	0.57 [0.22, 1.45]	
Ye Min 2020	2	50	13	50	13.1%	0.12 [0.03, 0.56]	
Zeng Xuezhen 2019	18	30	22	30	9.3%	0.55 [0.18, 1.62]	
Total (95% CI)		262		246	100.0%	0.25 [0.17, 0.38]	◆
Total events	74		140				
Heterogeneity: Chi <sup>2</sup> = 11	.19, df = 6	(P = 0.0)	08); I <sup>z</sup> = 4I	6%			
Test for overall effect: Z	= 6.64 (P <	0.0000	11)				0.01 0.1 1 10 100
							Favours (experimental) Favours (control)

Figure 10. Recurrence rate for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

	Experim	ental	Contr	ol		Risk Difference	Risk Difference
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% Cl	M-H, Random, 95% Cl
Cheng Yanwen 2010	0	60	0	60	25.1%	0.00 [-0.03, 0.03]	+
Gao Dongmei 2019	2	71	3	69	21.9%	-0.02 [-0.08, 0.05]	-
Wang Junli 2013	0	30	0	30	21.7%	0.00 [-0.06, 0.06]	+
Ye Min 2020	0	50	11	50	15.0%	-0.22 [-0.34, -0.10]	<b>—</b>
Yong Hui 2018	2	30	0	30	16.4%	0.07 [-0.04, 0.17]	+
Total (95% CI)		241		239	100.0%	-0.03 [-0.09, 0.04]	•
Total events	4		14				
Heterogeneity: Tau <sup>2</sup> = 0.	.00; Chi <sup>2</sup> =	21.88, 0	df=4 (P=	0.000	2); <b>i²</b> = 82	%	
Test for overall effect: Z	= 0.72 (P =	0.47)					Favours [experimental] Favours [control]

Figure 11. A forest plot of the adverse reactions for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

[33]. This systematic evaluation showed that all 18 included studies [10-27] reported the total effective rate of TCM external therapy for FC patients. This therapeutic method can improve FC patients' clinical symptoms effectively.

#### Effect of TCM external therapy on the life quality

The incidence rate of FC has increased. It was also common among middle-aged and young people. Constipation affects the quality of life of individuals. Combined with serious cardiovascular and cerebrovascular diseases, it even leads to death due to defecation difficulties [32]. According to TCM, constipation develops due to the dysfunction of Zang-Fu organs (including the large intestine, which conducts dross and transports body fluids). Curing the symptoms related to this disease alleviates the defecation difficulties and also effectively solves the overall coordination problem of multiple Zang-Fu organs. Besides oral decoction, there were various external treatment methods



**Figure 12.** The inverted funnel chart of the total effective rate for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.



**Figure 13.** The inverted funnel chart of the subgroup analysis of the total effective rate for functional constipation (FC) patients treated with traditional Chinese medicine (TCM) external therapy.

[34]. According to the TCM principle of "ascending spleen Qi and descending stomach Qi", the abdominal conception vessels and the spleen and stomach meridian acupoints of the patients were stimulated after treatment. The therapeutic agent acts on the body by absorption through the skin and the mucous membrane, stimulating the Qi and blood of meridians and collaterals, adjusting the Zang-Fu, balancing Yin and Yang, and reconciling Qi and blood. This helps to adjust the gastrointestinal Qi mechanism, improving the stool form, increasing gastrointestinal motility, alleviating abdominal distension, promoting defecation, exhaustion, and gastrointestinal emptying, and finally, improving the quality of life. This study systematically evaluated the effects of TCM external therapy on life quality, which suggested that this therapeutic technique can improve the life quality.

#### Effect of TCM external therapy on the symptom scores of FC patients

TCM external therapy was based on the meridians and collaterals theory and the basic theory of traditional Chinese medicine. It integrates acupoints, meridians and collaterals, and medicines. As a special acupoints-stimulating treatment method, the acupoint catgut embedding of TCM external therapy combines the theory of acupuncture and moxibustion science and modern physics. The acupuncture method can produce a needling sensation, achieving a short-term and quick effect. The catgut was used to stimulate the acupoints for a long time. The treatment effect can last for 15 days [35, 36]. This method has a benign and lasting biochemical and physical stimulation to selected acu-

points, such as immediate stimulation effect, allogeneic protein effect, stimulation-reaction effect, selective antagonism effect, and local tissue medium concentration change [10]. Manipulation uses certain massage techniques to stimulate the acupoints on the surface of the body. It can regulate the function of the gastrointestinal tract and accelerate the motility of the stomach [37]. The mechanical energy was transformed by continuously manipulating stimulation into heat energy, which can promote intestinal blood circulation and alleviate intestinal spasms. Furthermore, it regulates the function of the large intestine to transmit dross through the specific effect of abdominal acupoints, gradually restores the autonomous peristalsis function of the intestine, and enables the patients to defecate autonomously [27]. Studies have shown that acupoint catgut embedding excites the parasympathetic nerve, improves the nerve function of the anorectum, improves the intestinal smooth muscle tension and excitability, increases intestinal peristalsis, accelerates defecation, thus promoting defecation reflex, restoring the weakened gastrointestinal electrical rhythm of patients to normal, increasing gastrointestinal fast-wave activity, strengthening the tension of large intestine, and being more conducive to defecation [36]. Eight of the included studies [10, 13-15, 20-22, 26] compared the effect of TCM external therapy on the symptom scores, suggesting that the therapeutic method can improve the symptom scores of FC patients.

# Effect of TCM external therapy on defecation time and recurrence rate in FC patients

The acupoint application of TCM external therapy was based on the meridians & collaterals theory and the basic theory of traditional Chinese medicine, integrating acupoints, meridians & collaterals, and medicines. This method works through two effects: the biological wave effect and the acupoint effect. By absorbing the energy from the surrounding environment of the body, it can emit biological waves of 8-14 µm. When acting on the human body, it produces a biological resonance effect through absorption, transmission, reflection, and penetration, thus stimulating the activity of muscle cells [17]. Medicines have a stimulating and regulating effect by acting on the corresponding acupoints of the body. It works through the absorption of medicines, which helps to adjust the human Zang-Fu function accordingly, thus enhancing the therapeutic effect. This method is noninvasive, simple and inexpensive, and has a wide application [38]. The results of a meta-analysis in a study by Tingting et al. [39] showed that TCM can effectively shorten the defecation time of chronic FC patients and reduce the recurrence rate.

# Effect of TCM external therapy on SCBM of FC patients

The moxibustion method of TCM external therapy involves broiling the skin surface of acupoints at low temperatures by burning moxa sticks or moxa cigars, which warns the meridians and harmonizes Qi & blood. Clinically, warming-needling moxibustion, salt-partition moxibustion, conventional acupuncture, and other external treatment methods were used according to syndrome differentiation. It can dredge the Qi and blood of patients' meridians and collaterals and regulate the Yin and Yang of Zang-Fu organs, thus promoting the Qi mechanism and defecation. Three studies included here [10, 21, 25] compared the impact of TCM external therapy on SCBM, suggesting that the therapeutic method can increase the SCBM of FC patients.

# Limitations of this study

The limitations of the included studies were as follows: (1) They were all Chinese studies, and the population was not diverse. (2) The overall quality of the studies was not high, and most literature did not specifically describe the randomized method; The sample size was small, and the studies did not describe in detail the estimation of sample size, loss of follow-up, and drop-out and elimination of cases; Most studies lacked follow-up, and thus, there was a certain lack of verification and one-sidedness in the long-term efficacy and safety evaluation of such studies. (3) The diagnosis and efficacy evaluation criteria of various studies were not uniform, there were many treatment methods of TCM external therapy, and the operation process and the intervention course were inconsistent, which affected the stability of the study. More rigorous research is therefore required. While focusing on randomized double-blind studies, the observation of long-term curative effects should be strengthened, the lost-to-follow-up should be supplemented, drop-out and eliminated cases should be recorded and accounted for, and the negative results should be considered. We aim to conduct large-sample, multi-center, randomized controlled, double-blind, and high-quality studies that provide clinical trial data on evidence-based FC treatment by TCM external therapy.

In conclusion, TCM external therapy has good clinical efficacy in treating FC patients. It can effectively improve the total clinical effective rate and the patient's quality of life, reduce constipation symptoms, shorten defecation time and SCBM, and reduce the recurrence rate. This therapy has no adverse reaction and can be widely applied in clinical practice.

#### Acknowledgements

Supported by 2022-2023 Enshi Prefecture Social Science Project JCY20210000022021-2022 General project of Hubei Province ZY2021M062.

#### Disclosure of conflict of interest

None.

Address correspondence to: Lili Tan, Department of Acupuncture and Massage, National Hospital of Enshi Tujia and Miao Autonomous Prefecture, No. 178, Hangkong Avenue, Enshi 445000, Hubei, China. E-mail: lili20120708@163.com; Ruofen Yan, Department of Nursing, National Hospital of Enshi Tujia and Miao Autonomous Prefecture, No. 178, Hangkong Avenue, Enshi 445000, Hubei, China. E-mail: yrf15997730306@126.com

# References

- Cui L. Systematic evaluation and clinical study of umbilical application therapy intervention in functional constipation. Beijing: China Academy of Traditional Chinese Medical Sciences; 2017.
- [2] Wang YB and Huang ZC. Progress in diagnosis and treatment of mixed constipation [J]. Chin J Colorectal Diseases Electronic Journal 2022; 11: 59-64.
- [3] Liu YJ, Chang YJ, Zhang P, Liu T, Shi HX, Zhou AN, Wei RH, Chen JD and Li BL. The advantages of TCM in treating functional constipation. Chin J Integr Med 2015; 23: 589-591.
- [4] Guo XF, Ke MY, Pan GZ, Han SM, Fang XC, Lu SC and Guo HP. Analysis of cluster, stratified, randomized epidemiological investigation and related factors in Beijing. Chung Hua Hsiao Hua Tsa Chih 2002; 22: 637-638.
- [5] Liu ZY, Yang GG, Shen Z, He WY, He F and Yuan YM. Epidemiological survey of constipation in Hangzhou. Chung Hua Hsiao Hua Tsa Chih 2004; 24: 435-436.
- [6] Peng DZ, Zeng WB, Wu ZL Zhang XG, Xie JH and Gu Y. The recent curative effect of massage in treating slow transmission constipa-

tion in women. Sichuan Traditional Chinese Medicine 2010; 28: 109-110.

- [7] Chang JH, Liu XX and Yang DH. Research status of acupuncture therapy for senile constipation. Clinical Journal of Traditional Chinese Medicine 2019; 31: 385-387.
- [8] Qu M. Experimental study on the treatment of functional constipation. Baoding: Hebei University; 2013.
- [9] Liu M. Systematic evaluation, meta-one-analysis. Beijing: People's Health Press; 2014. pp. 69-71.
- [10] Zhai D, Tong XJ, Wang C and Shi BL. Randomized controlled study of eight-point buried line for functional constipation in the elderly. Zhongguo Zhongxiyi Jiehe Xiaohua Zazhi 2018; 26: 751-755.
- [11] Wang JL and Zhao XX. Randomized and parallel controlled study of abdominal acupoint application for habitual constipation in the elderly. Journal of Practical Traditional Chinese Internal Medicine 2013; 27: 17-18.
- [12] Jun W. Observation of the clinical efficacy of interdrug moxibustion in treating senile functional constipation. Asia-Pacific Traditional Medicine 2017; 13: 123-125.
- [13] Wu SW. Clinical study on treating functional constipation in the elderly. Guangzhou: Guangzhou University of Traditional Chinese Medicine; 2009.
- [14] Gao DM, Xiang H, Su Z, Song WJ, Lei L, Ren JH, Jing YX, Jiang SL and Sun BX. Randomized double-blind controlled study of shenque point application for functional constipation in the elderly. Practical Geriatrics 2019; 33: 394-396.
- [15] Wang JJ. Clinical observation of warm acupuncture in the treatment of elderly constipation. J Tradit Chin Med 2015; 47: 187-188.
- [16] Zeng XJ. Clinical effect of soup enema in elderly patients with functional constipation. Front Med 2019; 9: 227-228.
- [17] Jiang Y. Observation and nursing of acupoint application on constipation in elderly patients. Guangming Journal of Chinese Medicine 2012; 27: 2320-2321.
- [18] Guo Q. Clinical effect of Yu Ji point embedding line in the treatment of senile constipation. Harbin: Heilongjiang University of Traditional Chinese Medicine; 2014.
- [19] Jin HZ. Clinical efficacy of acupuncture on the treatment of senile constipation. China Clinical Practical Medicine 2014; 9: 239-240.
- [20] Yong H. Clinical research on the treatment of qi stagnation soup with functional constipation. Shandong: Shandong University of Traditional Chinese Medicine; 2018.
- [21] Cheng YW and Zhang ZY. Efficacy observation of maren capsule combined with external

treatment method for treating functional constipation. Shanxi J Tradit Chin Med 2010; 26: 17-18.

- [22] Chao GD. Clinical observation of functional constipation. China's Naturopathy 2017; 25: 53-55.
- [23] Cao Z, Cai JH and Wang WY. Clinical study on the curative effect of pediatric massage combined with dong's appetizer powder on functional constipation in children. Proceedings of the Annual Meeting of Traditional Chinese Medicine and the 6th National Conference on Traditional Chinese Medicine and Children's Massage 2017: 268-274.
- [24] Gao YL and Yan HP. Clinical research on acupoint application and acupuncture massage for the treatment of chronic functional constipation. China's Naturopathy 2011; 19: 28-29.
- [25] Ma YF, Hu HY, Liao ZY and Chen L. Clinical study on the application of traditional Chinese medicine acupoint aombined with girong run intestinal oral solution for treating chronic functional constipation in the elderly. J Tradit Chin Med 2020; 52: 165-168.
- [26] Ye M, Huang XD and Wang Z. Treatment effect of traditional Chinese medicine on gastrointestinal functional constipation. Chinese Primary Health Care 2020; 34: 88-91.
- [27] Chen YF. Abdominal massage treated 30 cases of functional constipation in the elderly. J Tradit Chin Med 2011; 20: 42-43.
- [28] Drossman DA and Dumitrascu DL. Rome III: new standard for functional gastrointestinal disorders. J Gastrointestin Liver Dis 2006; 15: 237-241.
- [29] Yang YS and Peng LH. Roman diagnostic criteria and research status of functional enteropathy. Journal of PLA Medical College 2013; 34: 541-543.
- [30] The State Administration of Traditional Chinese Medicine. Efficacy criteria for diagnosis of TCM syndrome. Nanjing: Nanjing University Press; 1994. pp. 219.
- [31] Zheng XY. Guiding principles for clinical research of new TCM drugs (trial). Beijing: China Medical Science and Technology Press; 2002. pp. 392.

- [32] Cheng CW, Bian ZX and Wu TX. Systematic review of chinese herbal medicine for functional constipation. World J Gastroenterol 2009; 15: 4886-4895.
- [33] Zhao YF, Ma XQ, Wang R, Yan XY, Li ZS, Zou DW and He J. Epidemiology of functional constipation and comparison with constipation-predominant irritable bowel syndrome: the systematic investigation of gastrointestinal diseases in China (SILC). Aliment Pharmacol Ther 2011; 34: 1020-1029.
- [34] Xiong GR, Zhong YJ and Li MX. Clinical effect of constipation of traditional Chinese medicine tea, rubbing and ironing in bedridden patients. Journal of Frontiers of Medicine 2019; 9: 203-204.
- [35] Jiang CY, Li CG and Sheng DD. Observation on the curative effect of simple acupoint embedding line in treating Qi deficiency and chronic constipation. Zhejiang J Tradit Chin Med 2020; 55: 364.
- [36] Du J, Liu H, Xu J, Xu J, Lu CM, Zhou JF, Wu PH, Zheng LY and Li XW. Acupoint line embedding method for treating constipation after stroke: a multi-center randomized controlled study. Zhongguo Zhenjiu 2020; 40: 493-497.
- [37] Yang Y, Li ZL and Peng DD. Observation of the effect of Zen method combined with moabdomen method in the treatment of senile constipation. Liaoning Zhongyiyao Daxue Xuebao 2013; 15: 221-223.
- [38] Zhang YY, Wang R and Hu YX. Acupoint application therapy for Lao Orrhea. Journal of Changchun University of Traditional Chinese Medicine 2019; 35: 1056-1057, 1071.
- [39] Yu TT, Zhao RH, Yu XL, Zeng LM and Zhou X. Meta-analysis of the efficacy of traditional Chinese medicine acupoint application therapy in treating chronic functional constipation. Chin Gen Prac 2014; 17: 3109-3112.