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# Acupuncture combined with language training for aphasia in children with cerebral palsy: a systematic review with meta-analysis and trial sequential analysis

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**Objective:** The aim of this study was to comprehensively evaluate the efficacy of acupuncture combined with language training in the treatment of aphasia in children with cerebral palsy (CP).

**Methods:** We searched eight electronic databases from their inceptions to July 1, 2024 for randomized controlled trials (RCTs) of acupuncture for aphasia in children with CP. The evaluation of methodological quality for RCTs incorporated in this study adhered to the guidelines provided by the Cochrane risk-of-bias tool (ROB2). The Grading of Recommendations Assessment, Development and Evaluation Approach (GRADE) was used to evaluate the certainty of evidence of each outcome. The heterogeneity of the included literature was tested using Review Manager 5.4 software, while publication bias was estimated using funnel plots and Egger's tests by STATA15.1. A trial sequential analysis (TSA) was performed to test the robustness of the conclusiveness of our results.

Results: In this study, we encompassed a total of 56 randomised controlled trials encompassing 4,683 participants. The majority of these trials were characterized by either a high or uncertain risk of bias, predominantly due to the omission of blinding within their experimental setups. Meta-analysis showed that acupuncture combined with language training was significantly better than language training alone in improving the clinical efficiency (RR: 1.25; 95% CI: 1.21, 1.29; p < 0.00001). A subgroup analysis of the different types of acupuncture revealed that acupuncture, electroacupuncture, scalp acupuncture, and auricular point seed-pressing all showed a significant improvement in aphasia in children with CP. Acupuncture combined with language training could significantly improve the adaptive behaviour (MD: 7.46; 95% CI: 3.67, 11.26; p = 0.0001), verbal behaviour (MD: 7.79; 95% CI: 5.66, 9.92; p < 0.00001), fine motor behaviour (MD: 4.66; 95% CI: 1.28, 8.03; p = 0.007), and personal social behaviour (MD: 6.47; 95% CI: 2.38, 10.55; p = 0.002); it was also significantly more effective in improving the language comprehension developmental quotient (SMD: 2.02; 95% CI: 1.54, 2.50; p < 0.00001), the expressive language development quotient (SMD: 2.40; 95% CI: 1.76, 3.03; p < 0.00001), assessment of dysarthria (MD: 0.40; 95% CI: 0.11, 0.69; p = 0.007), and oral motor function (SMD: 2.63; 95% CI: 1.36, 3.90; p < 0.0001).

**Conclusion:** Acupuncture combined with language training could be an effective treatment for aphasia in children with CP. Due to low or very low certainty of evidence and high heterogeneity, more rigorous RCTs are needed to verify the effect of acupuncture in the management of CP.

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#### KEYWORDS

acupuncture, language training, cerebral palsy, aphasia, meta-analysis, randomised controlled trials

## **1** Introduction

Cerebral palsy (CP) is a permanent central nervous system disorder that affects motor control and postural regulation in children. According to statistics, there are approximately 2–3 cases of CP per 1,000 live births worldwide (1). The prevalence rate of CP in China is reported to be 0.246 percent and with this number increasing by 30,000 to 80,000 per year (2). CP mainly manifests as motor dysfunction. In addition, CP may be accompanied by a variety of other comorbidities, of which aphasia is one of the common ones, with an incidence of approximately 80% (3). Aphasia not only affects the patient's ability to communicate, but may also have a profound impact on their psychological development, social interactions, and overall quality of life. However, in clinical practice, motor dysfunction is often the focus of treatment, thus missing the optimal time for language and speech function treatment and intervention (4).

At present, no targeted medication exists for the treatment of language disorder manifestations in CP cases; language training is one of the main methods to treat language disorders in children with CP, using scientific language training to stimulate the language function of the child's brain and achieve the role of promoting language development. However, the use of language rehabilitation training is relatively simple, with relatively poor efficacy and limitations in improving the disease prognosis (5).

Acupuncture, as an important part of traditional Chinese medicine (TCM), which has been practiced for over two thousand years to modulate body physiology via stimulation at specific body regions (acupoints) (6, 7). It has advantages such as simple operation, non-invasive treatment, and fewer adverse reactions, which can fully exert a therapeutic effect and have a positive effect on shortening the course of treatment (8). Acupuncture stimulates specific areas of the brain cortex, promotes synaptic regeneration, enhances brain compensatory function, helps alleviate brain cell damage, and protects neurons (9, 10). Recent studies have shown that acupuncture can improve the speech expression in children with CP by modulating the nerves (11, 12). However, there is no evidence-based medical evidence to prove whether acupuncture has an ameliorative effect on aphasia in children with CP. Therefore, this paper systematically reviews the research data in recent years, aiming to study the effectiveness of acupuncture in improving aphasia in children with CP more objectively through metaanalysis, with a view to providing evidence for clinical medical research.

# 2 Methods

Adhering to the PRISMA extension guidelines (13), this research was executed. Our systematic review methodology was registered in advance with PROSPERO under the identifier CRD42024501328, discoverable at https://www.crd.york.ac.uk/prospero/.

#### 2.1 Data sources and search strategy

Our search encompassed a range of pertinent databases, including PubMed, Embase, the Cochrane Library, Web of Science, along with Chinese databases including the China Knowledge Infrastructure (CNKI), Wan-Fang Database, China Science Journal Database (VIP), and SinoMed, spanning from the inception of these databases up to the date of July 1, 2024. The main search terms were "Acupuncture," "Electroacupuncture," "Cerebral palsy," "Aphasia," "Speech Disorder," "Dysarthria," "Language Development Disorder," and "randomized controlled trial." The comprehensive search methodology is detailed in the Supplementary File 1.

#### 2.2 Inclusion criteria

#### 2.2.1 Types of studies

Eligible for inclusion in our study were RCTs that investigated the acupuncture combined with language training for aphasia among children diagnosed with CP. The term "random" in these trials pertains to the allocation process, which may or may not have incorporated blinding.

#### 2.2.2 Participants

The study involved children diagnosed with CP as well as those who fulfilled the criteria for aphasia. The selection of participants was unrestricted by gender or nationality.

#### 2.2.3 Interventions

In the control arm of the study, participants were exclusively provided with language training. Conversely, the treatment arm included an integrated approach, offering both acupuncture and language training to the patients. Acupuncture therapy included body acupuncture, electroacupuncture, warming acupuncture, catgut implantation at acupoint, auricular pressure beans, and acupoint injection. The study imposed no limitations regarding the precise timing of interventions, selection of acupuncture points, or duration of treatment protocols.

#### 2.2.4 Outcomes

The primary outcomes include clinical effectiveness rate and development quotient (adaptive behaviour, gross motor behaviour, verbal behaviour, fine motor behaviour, and personal social behaviour), while the secondary outcomes include assessment of dysarthria, oral motor function, expressive language development quotient, and language comprehension developmental quotient. According to the evaluation standard of the China Code for the Diagnosis and Treatment of Rehabilitation Medicine from the Department of Medical Administration of the People's Republic of China: (1) Significant effects: language development delay, language development and understanding ability to improve the two stages, and language expression ability improvement; (2) Effective: language development delay, language development understanding ability to improve a stage, and language expression ability has improved; (3) Invalid: the improvement in language delay was not obvious. Clinical effectiveness rate = (basic cure + significant + effective)/100% of total cases. The development of children was evaluated using the Gesell development scale, which includes the following five aspects: adaptive behaviour, gross motor behaviour, verbal behaviour, fine motor behaviour, and personal social behaviour. The lower the score from this scale, the less ideal the development status is.

### 2.3 Exclusion criteria

The criteria for exclusion were delineated as follows: (1) for repetitive articles, keep only the most recent or comprehensive ones; (2) meta-analyses, retrospective investigations, case reports, animal experiments, non-RCTs, non-English and Chinese papers were excluded; (3) interventions that do not meet the requirements, as well as diseases that do not match those in this study, are excluded; (4) articles that could not be obtained were excluded; (5) articles with non-compliant research subjects were excluded.

## 2.4 Selection criteria

The literature was independently evaluated by two researchers against the established inclusion and exclusion criteria, employing the PICOS to guide the selection process.

#### 2.5 Data screening and extraction

For the purpose of pinpointing studies compliant with the inclusion criteria, all included studies were uploaded into Endnote 20. Two reviewers, each with specialized training (SZL and YJL), scrutinized each study individually, and removed duplicates studies, and studies that failed to satisfy the inclusion criteria. Data extraction encompassed pertinent details: authorship, year of publication, age, gender, the size of the study sample, the duration of the treatment regimen, the methodology of intervention, and outcome indicators. Upon completion of their individual reviews, the two reviewers performed a cross-verification to confirm the data's veracity. In instances where discrepancies arose between the reviewers' assessments or data extractions, a third, neutral assessor (JC) was consulted to reach a consensus.

### 2.6 Risk of bias

The evaluation of the methodological quality within the selected RCTs was guided by the Cochrane risk-of-bias tool (ROB2). This

assessment was independently carried out by two reviewers (YJL and Y-JL), using Covidence to ensure blinding (14). For any risk domains classified as serious, critical, or lacking information, the reviewers provided detailed justifications. When essential details were not readily available in the reports under review, the reviewers sought and verified information from study protocols, clinical trial registries, and any supplementary documents provided. To resolve any inconsistencies in the assessment, the reviewers engaged in discussions and strived to reach a mutual agreement on the evaluation of each risk domain within the ROB2 tool. In cases where a consensus was not achieved, a third reviewer (JC), was invited to participate in the assessment, ensuring a unified decision was made. ROB2 was conducted at the outcome level.

### 2.7 GRADE assessment

Furthermore, the certainty of evidence derived from the synthesis of the primary outcomes was appraised using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework (15). For each primary outcome within the network estimate, an evaluation was conducted considering several criteria, including risk of bias, indirectness, inconsistency, imprecision, and publication bias. In accordance with the GRADE framework, the level of evidence was adjusted; it was lowered one tier for issues deemed "serious" and two tiers for those considered "very serious." Ultimately, an integrated evaluation of the evidence's certainty was formulated, with each comparison receiving an overall qualitative rating. This rating was based on a four-tiered system of evidence quality: high, moderate, low, and very low.

### 2.8 Data analysis

Data analysis was performed utilizing the Cochrane Collaboration Meta-analysis software (Review Manager 5.4). For dichotomous data, the relative risk (RR) along with its 95% confidence interval (CI) was calculated, whereas for continuous data, the weighted mean difference (WMD) or standard mean difference (SMD) and their corresponding 95% CI were reported. Statistical significance was set at a p-value of less than 0.05. A heterogeneity test was carried out on the included literature. If  $p \le 0.1$  and  $l^2 \ge 50\%$ , it indicated the existence of heterogeneity; the random effect model was used for heterogeneity analysis. Otherwise, a fixed-effects model was used. Given the potential impact of acupuncture type on treatment efficacy, a subgroup analysis was conducted to examine the effectiveness of different acupuncture modalities in treating aphasia in children with CP. Additionally, considering the possible influence of treatment duration, subgroup analyses were performed to compare the efficacy of treatments lasting up to 3 months versus those exceeding this period. A sensitivity analysis was conducted to evaluate the robustness of the findings by sequentially excluding each study and scrutinizing the impact on both the aggregated effectiveness of the remaining studies and the overall efficacy. Furthermore, Egger's test was applied to determine the presence of publication bias.

To control the risks associated with type I and type II errors, our study implemented a trial sequential analysis (TSA) to assess the clinical efficacy of acupuncture in conjunction with language training for aphasia in children with CP. Utilizing the TSA software, version 0.9.5.10 beta, we adjusted the confidence intervals (CIs) in response to the sparse data and the issue of repeated testing within the cumulative meta-analysis. A conclusive determination is attainable if the cumulative Z-curve surpasses the TSA boundary or intersects with the Required Information Size line, indicating that additional research may not be warranted (16). TSA was performed at an overall 10% risk level of a type I error and with 80% power.

# **3** Results

### 3.1 Literature selection

We searched a total of 1,775 articles from eight electronic databases. Following the removal of duplicate studies, 1,092 relevant studies were identified. Upon reviewing the titles and abstracts, we narrowed down the selection to 108 studies that appeared to be pertinent to our investigation. Subsequently, two reviewers, working independently, conducted a thorough examination of the full texts of the studies, who conducted an additional eligibility assessment according to the predefined inclusion and exclusion criteria. Ultimately, 56 studies were deemed suitable for inclusion in the final meta-analysis, with all trials being published in Chinese. The comprehensive process of literature screening is depicted in Figure 1.

# 3.2 Characteristics of the included literature

This study encompassed 56 articles, each a randomized controlled trial originating from a single center within China. The English titles, authors and abstracts of all the articles are included in Supplementary File 2. Collectively, these trials enrolled a total of 4,683 patients, with 2,371 allocated to the experimental group and 2,312 to the control group (17-72), and the length of the treatment course ranged from 1 to 9 months. Incomplete baseline feature details were identified in several studies (17, 19, 25, 42, 48, 68), but no significant differences were observed between groups among the characteristics (p > 0.05). Of the 56 studies, 39 used body acupuncture (17-19, 21, 25, 26, 28-30, 33-38, 40-48, 50-52, 55, 58-62, 65-68, 71, 72), 13 used scalp acupuncture (20, 22-24, 27, 32, 39, 49, 53, 54, 56, 69, 70), one used laser acupuncture (31), one used auricular point seed-pressing (59), and three used electroacupuncture (25, 57, 64) [among them, Zou et al. (25) had two experimental groups-one used acupuncture and the other used electroacupuncture]. In addition, only one study (25) that reported on the safety of acupuncture. A summary of the fundamental characteristics of the included studies can be found in Table 1.

## 3.3 Risk of study bias

We utilised the revised Cochrane risk-of-bias tool (ROB 2.0) to evaluate the risk of bias and the quality of the included studies. Four studies' outcomes were rated as low risk (19, 30, 41, 61), two studies' outcomes were rated as high risk (18, 55), and the results of the other studies were rated as having some concerns (Figures 2, 3). All trials mentioned randomisation; Nonetheless, specifics regarding the randomization were reported in merely four RCTs (19, 30, 41, 61), which consequently earned a low risk designation. Notably, among these, two employed a random number table for their randomization process (30, 41), while the other pair adopted a single-blind, randomized controlled methodology (19, 61). In terms of measuring the outcome, there are two studies (18, 55) in which the evaluators were aware of the intervention received by the study participants; as such, the assessment of the outcome had been influenced by this knowledge and these trials were, therefore, rated as high risk. In addition, there are six studies (19, 30, 41, 56, 61, 67) in which the evaluators were unaware of the intervention that the study participants received, these trials were rated as low risk.

# 3.4 Certainty of evidence

The overall certainty of the evidence was rated for meta-analytic outcomes as being moderate to very low. The principal factors that led to the reduction in the evidence rating included concerns related to risk of bias, inconsistency, and imprecision. However, the assessment of indirectness did not undergo demotion, given that this systematic review adhered to stringent parameters for the selection of population, intervention, comparison, and outcome criteria. Evidence of very low certainty indicated that acupuncture combined with language training had no effect on improving either gross or fine motor behaviour. Figure 4 presents a summary of the results, with footnotes explaining the downgrade judgments (decreasing the rating of the certainty of the evidence).

# 4 Outcomes

## 4.1 The clinical effectiveness rate

A total of 51 studies (17–42, 45–53, 55–59, 61–66, 68–72) reported the clinical effectiveness rate [among them, Zou et al. (25) had two experimental groups-one used acupuncture and the other used electroacupuncture] and there was no significant heterogeneity between them (p = 0.63,  $I^2 = 0\%$ ). Utilizing the fixed-effects model, a significant disparity was observed in the clinical effectiveness rate between the integration of acupuncture with language training and language training alone (RR: 1.25; 95% CI: 1.21, 1.29; p < 0.00001). This finding underscores the potential of acupuncture, when combined with language training, to improve the clinical efficacy of treating aphasia in patients with CP, as shown in Figure 5.

## 4.2 GESELL development scale

The GESELL development scale consists of five main dimensions, which are adaptive behaviour, gross motor behaviour, verbal behaviour, fine motor behaviour, and personal social behaviour.

Adaptive behaviour was reported in nine studies (38, 40, 55, 57, 59, 63, 65, 67, 70), and the statistical data revealed that acupuncture combined with language training significantly influenced adaptive behaviour in aphasic children with CP (MD: 7.46; 95% CI: 3.67, 11.26; p = 0.0001; heterogeneity:  $I^2 = 88\%$ ; p < 0.00001; Figure 6), which indicated that this treatment method significantly improves adaptive behaviour compared to treatment with language training alone. Three



studies (55, 59, 67) reported results showing no significant difference in gross motor behaviour between treatment using acupuncture combined with language training and treatment using language training alone (MD: 4.86; 95% CI: -0.62, 10.34; p = 0.08; heterogeneity:  $I^2 = 88\%$ ; p = 0.0002; Figure 6).

Verbal behaviour was reported in 15 studies (18, 25, 31, 40, 44, 52, 55, 57–59, 63, 65, 67, 70, 71) [among them, Zou et al. (25) had two experimental groups]; totally 132 CP children were randomly assigned to the speech training group (Group A, 44 cases), the electroacupuncture combined speech training group (Group B, 44 cases), and the acupuncture combined speech training group (Group C, 44 cases). Patients in Group A received one to one training including game therapy, therapy of communication attitudes, and so

on. Those in the other two groups were needled at Baihui (GV20), Sishencong (EX-HN1), the first language zone, the second language zone, and the third language zone. Those in Group B were treated with electric needling and then speech training. Those in Group C were treated with language training, while needling with needle maintaining for 40 min. All patients were treated once daily, 5 times per week, 20 times as one course of treatment, six courses in total, and the results indicated that acupuncture combined with language training produced a notably positive impact on verbal behaviour in aphasic children with CP (MD: 7.79; 95% CI: 5.66, 9.92; *p* < 0.00001; heterogeneity:  $I^2 = 86\%$ ; *p* < 0.00001; Figure 6), which indicated that this treatment method significantly improves verbal behaviour compared to treatment with language training alone. Statistics from the three studies (55, 59, 67)

#### TABLE 1 The basic characteristics of the included RCTs.

Study ID	Patie	nts N	Avera (ye	ge age ars)	Se	ex	Interv	ention	Treatment (days)	Outcomes
	E	С	E	С	м	F	E	С		
Li (17)	30	30	N	JR	N	R	Acupuncture	Language training	60 days	0
Liu et al. (18)	38	38	2	-7	20 28	18 10	Acupuncture	Language training	10 days × 3	14
Li (19)	30	30	N	JR	47	13	Acupuncture	Language training	60 days	0
V (20)	40	76		. 7	28	21	C la	T	00.1	0
rang (20)	49	/0	0.0	5-7	42	34	scarp acupuncture	Language training	90 days	
Jiang (21)	47	46	2	-6	51	42	Acupuncture	Language training	20 days × 4	0
Li et al. (22)	31	30	1	-6	37	24	Scalp acupuncture	Language training	6 days × 12	0
Li et al. (23)	49	76	3.4	± 1.2	28 42	21 34	Scalp acupuncture	Language training	15 days × 5	0
Liang et al. (24)	31	30	3.6	± 0.6	37	24	Scalp acupuncture	Language training	20 days × 3	0089
Zou (electroacupuncture) et al. (25)	40	39	1	-7	N	IR	Electroacupuncture	Language training	20 days × 6	0 4
Zou (acupuncture) et al. (25)	42	39	1	-7	N	R	Acupuncture	Language training	20 days × 6	0.4
Fan and Yang (26)	50	50	1	-6	51	49	Acupuncture	Language training	21 days × 8	0
Jin et al. (27)	64	57	3.9 ± 0.6	$4.3 \pm 0.7$	67	54	Scalp acupuncture	Language training	28 days × 6	0
Meng and Zhou (28)	15	15	3	5	11 9	4	Acupuncture	Language training	70 days	0
					9	6				
Yang (29)	15	15	3.1 ± 1.1	$5.1 \pm 1.1$	4	11	Acupuncture	Language training	30 days	1
	45	45	(2) 24	65.05	21	24			20.1	0
Li et al. (30)	45	45	6.3 ± 2.4	6.5 ± 2.5	23	22	Acupuncture	Language training	30 days × 3	Ű
Li et al. (31)	20	20	4.12 ± 2.15	4.56 ± 1.95	13	7	Laser acupuncture	Language training	20 days × 3	14
					12	8				
Li (32)	80	80	2.8	± 1.5	88	72	Scalp acupuncture	Language training	30 days × 6	0
Liu and Sni (33)	30	30	2	-0	22	24	Acupuncture	Language training	30 days × 3	0.089
Wang et al. (34)	30	30	$1.89\pm0.62$	$2.16\pm0.57$	22	6	Acupuncture	Language training	90 days × 2	0
					20	25				
Zhang (35)	45	45	3	5	30	15	Acupuncture	Language training	56 days × 3	0
					24	20			_	
Wang (36)	44	44	$4.87 \pm 1.12$	$4.62 \pm 1.03$	26	18	Acupuncture	Language training	90 days	(1) (8) (9)
Vii (37)	31	30	4 + 1 2	35+1	15	16	Acupuncture	Language training	90 days	D
14(37)	51	50	7 ± 1.2	5.5 ± 1	17	13				
Guo et al. (38)	41	40	$3.34 \pm 1.45$	3.61 ± 1.69	25	16	Acupuncture	Language training	10 days × 9	10
					27	13				
Li et al. (39)	60	60	3.52 ± 1.24	3.55 ± 1.21	36	24	Scalp acupuncture	Language training	15 days × 5	0
	20	20	239 ± 0.04	$2.52 \pm 0.01$	35	10	Acupuncture	Language training	180 days	00000
	37	37	2.30 ± 0.94	2.32 ± 0.91	21	10	Acupuliciule	Language training	100 days	୰୰ଡ଼ଡ଼ୢୄୄୄ
Qin and Li (41)	45	45	2-	-10	20	24	Acupuncture	Language training	30 days × 3	0
					23	22				

(Continued)

#### TABLE 1 (Continued)

Study ID	Patie	nts N	Avera (ye	ge age ars)	S	ex	Interv	ention	Treatment (days)	Outcomes
	E	С	E	С	М	F	E	С		
Tao and Ding (42)	30	30	2-	-10	N	IR	Acupuncture	Language training	20 days × 5	0
Du et al. (43)	68	68	$2.3 \pm 1.2$	$2.1 \pm 1.3$	41	27	Acupuncture	Language training	90 days	78
					43	25				
Liu et al. (44)	30	30	$3.28\pm0.76$	$3.02\pm0.78$	17	13	Acupuncture	Language training	10 days × 9	4
					16	14				
Shao (45)	39	40	$2.24 \pm 1.17$	$2.53 \pm 1.46$	30	9	Acupuncture	Language training	90 days × 3	1
					32	8				
Zhang (46)	38	38	2.9 ± 1.2	3.2 ± 0.9	21	17	Acupuncture	Language training	90 days	0
					20	18			0.01	
Zhao (47)	30	30	3.52 ± 1.38	3.87 ± 1.52	22	8	Acupuncture	Language training	90 days	U
Bao (48)	39	40	N	IR	20	ID	Acupuncture	Language training	90 days × 3	0
Chen (49)	50	50	4 29 + 0 86	4 17 + 0.92	28	22	Scalp acupuncture	Language training	90 days	0
		20	1127 2 0100	1117 _ 0172	27	23		Language	yo uuyo	Ũ
Chen (50)	47	47	$2.14 \pm 0.82$	3.28 ± 0.89	25	22	Acupuncture	Language training	180 days	0
					24	23				
Wu et al. (51)	38	38	7.35 ± 3.32	7.40 ± 3.82	22	16	Acupuncture	Language training	90 days	1789
					21	17				
Zhao et al. (52)	49	49	4.51 ± 1.36	$4.82 \pm 1.17$	28	21	Acupuncture	Language training	90 days	009
					25	24	-			
Ai et al. (53)	15	15	3	.8	18	12	Scalp acupuncture	Language training	10 days × 12	0
Huang et al. (54)	33	33	4.37 ± 1.25	$4.58 \pm 1.45$	18	15	Scalp acupuncture	Language training	28 days × 6	080
					19	14				
Jiao (55)	56	55	$4.27\pm0.26$	$4.20\pm0.11$	28	28	Acupuncture	Language training	90 days	1234567
					27	28				8
Li (56)	40	40	$4.05\pm1.01$	$4.03 \pm 1.02$	23	17	Scalp acupuncture	Language training	90 days	0
					22	18				
Yuan et al. (57)	30	30	$5.45\pm0.33$	$5.39 \pm 0.42$	13	17	Electroacupuncture	Language training	30 days	124
					12	18				
Lian (58)	40	40	2.9 ± 1.3	3.0 ± 1.2	22	18	Acupuncture	Language training	30 days × 6	14
					23	17				
Lin et al. (59)	43	43	30.8 ± 2.6	30.4 ± 1.8	21	22	Auricular point	Language training	90 days	123456
			25.15	40.00	23	20	seed-pressing	<b>.</b>	100.1	
Liu (60)	75	75	3.5 ± 1.5	$4.0 \pm 2.0$	41	34	Acupuncture	Language training	180 days	Ŵ
Livetal (C1)	54	52	2 72 + 0.01	2.92 + 0.74	40	35	A	T an out of the initial	00 dama	
Liu et al. (61)	54	55	3.72 ± 0.91	$3.82 \pm 0.74$	32	22	Acupuncture	Language training	90 days	U
Ma (62)	40	40	29+09	$2.7 \pm 0.8$	21	19	Acupuncture	Language training	84 days	() () () () () () () () () () () () () () () () (
1/10 (02)	40	40	2.7 ± 0.7	2.7 ± 0.0	21	19	ncupuliciule	Language training	ortayo	909
Song (63)	33	33	4.23 + 1.24	4.44 ± 1.01	17	16	Acupuncture	Language training	90 davs	12460
					20	13				
Yu (64)	24	24	2.47 ± 0.73	2.23 ± 0.64	16	8	Electroacupuncture	Language training	90 days	0
					17	7				
L										

(Continued)

#### TABLE 1 (Continued)

Study ID	Patie	ents N	Average age (years)		Sex		Interv	vention	Treatment (days)	Outcomes
	E	С	E	С	М	F	Е	С		
Qiu (65)	30	30	2.39 ± 0.68	$2.42\pm0.71$	17	13	Acupuncture	Language training	180 days	02460
					19	11				
Wang (66)	35	35	3.81 ± 1.52	$3.88 \pm 1.53$	19	16	Acupuncture	Language training	90 days	()
					20	15				
Yan et al. (67)	30	30	7.35 ± 1.22	$7.14 \pm 1.31$	17	13	Acupuncture	Language training	60 days	234569
					18	12				
Yu (68)	30	30	1	-6	35	25	Acupuncture	Language training	NR	1
Jin and Huang (69)	124	66	$2.30 \pm 1.34$	$2.24 \pm 1.17$	102	22	Scalp acupuncture	Language training	28 days $\times$ 6	()
					51	15				
Yang and Liu (70)	50	50	$3.98\pm0.51$	$4.01\pm0.63$	30	20	Scalp acupuncture	Language training	30 days × 3	124678
					29	21				
Zhang et al. (71)	46	46	$3.42 \pm 1.02$	$3.53 \pm 1.05$	24	22	Acupuncture	Language training	90 days	14
					25	21				
Yang and Bai (72)	44	44	$4.81\pm0.52$	$4.78\pm0.46$	21	23	Acupuncture	Language training	90 days	()
					23	21				

E, experimental group; C, control group; M, male; F, female; NR, not reported; O clinical effectiveness rate; O adaptive behaviour; G gross motor behaviour; verbal behaviour; framework; o adaptive behaviour; a sessent of dysarthria; o aral motor function.



showed that acupuncture combined with language training exerted a significant influence on the fine motor behaviour in aphasic children with CP (MD: 4.66; 95% CI: 1.28, 8.03; p = 0.007; heterogeneity:  $I^2 = 75\%$ ; p = 0.02; Figure 6), which indicated that this method of treatment could significantly improve this type of behaviour compared to treatment with language training alone. Seven studies (40, 55, 59, 63, 65, 67, 70) reported statistical data showing that acupuncture combined with language training significantly impacted the personal social behaviour in the treatment of aphasia in children with CP (MD: 6.47; 95% CI: 2.38, 10.55; p = 0.002; heterogeneity:  $I^2 = 94\%$ ; p < 0.00001; Figure 6), which indicated that this method of treatment could significantly improve personal social behaviour in aphasic children with CP compared to treatment using language training alone.

# 4.3 Language comprehension developmental quotient

The language comprehension developmental quotient was reported in eight studies (24, 33, 43, 51, 54, 55, 62, 70) and the statistical analysis revealed that the integration of acupuncture with language training yielded a significant impact on this quotient of aphasic children with CP (SMD: 2.02; 95% CI: 1.54, 2.50; p < 0.00001; heterogeneity:  $I^2 = 85\%$ ; p < 0.00001; Figure 7A), which indicated that this method of treatment can significantly improve the language comprehension developmental quotient compared to treatment using language training alone.



# 4.4 Expressive language development quotient

Nine studies (24, 33, 36, 43, 51, 54, 55, 62, 70) reported the expressive language development quotient and the analysis of statistical data indicated that the combination of acupuncture and language training significantly influenced this quotient among children with CP (SMD: 2.40; 95% CI: 1.76, 3.03; p < 0.00001; heterogeneity:  $I^2 = 91\%$ ; p < 0.00001; Figure 7B), which indicated that this treatment method could improve the expressive language development quotient more so than treatment with language training alone.

# 4.5 Assessment of dysarthria

An assessment of dysarthria was reported in five studies (24, 33, 36, 51, 52) and the results showed that acupuncture combined with language training exerted a pronounced beneficial effect on dysarthria in aphasic children with CP (MD: 0.40; 95% CI: 0.11, 0.69; p = 0.007; heterogeneity:  $I^2 = 92\%$ ; p < 0.00001; Figure 7C), which indicated that this method of treatment could improve dysarthria more so than treatment using language training alone.

# 4.6 Oral motor function

Five studies (40, 54, 60, 63, 65) reported oral motor function and the statistical outcomes demonstrated a notable improvement in this characteristic of children with CP who suffered from aphasia, attributed to the concurrent application of acupuncture and language training (SMD: 2.63; 95% CI: 1.36, 3.90; p < 0.0001; heterogeneity:  $I^2 = 96\%$ ; p < 0.00001; Figure 7D), which indicated that this treatment method could improve the oral motor function more so than using treatment with language training alone.

# 4.7 Subgroup analysis

# 4.7.1 Analysis of the efficacy of different types of acupuncture

Figure 8 shows a subgroup analysis of the effect of different types of acupuncture on the efficacy of aphasia treatment in children with CP. Among them, 35 studies (17-19, 21, 25, 26, 28-30, 33-38, 40-42, 45-48, 50-52, 55, 58, 61-63, 65, 66, 68, 71, 72) used acupuncture as the intervention measure, three studies (25, 57, 64) used electroacupuncture, and 12 studies (20, 22-24, 27, 32, 39, 49, 53, 56, 69, 70) used scalp acupuncture. In addition, the intervention measures of auricular point seed-pressing (59) and laser acupuncture (31) were each discussed in one study. The results showed that acupuncture (RR: 1.27; 95% CI: 1.22, 1.32; p < 0.00001;  $I^2 = 0\%$ ), electroacupuncture (RR: 1.36; 95% CI: 1.16, 1.60; p = 0.0001;  $I^2 = 0\%$ ), scalp acupuncture (RR = 1.19; 95% CI: 1.13, 1.25; *p* < 0.00001; *I*<sup>2</sup> = 3%), and auricular point seed-pressing (RR: 1.30; 95% CI: 1.04, 1.62; *p* = 0.02) significantly improved aphasia in children with CP more so than when compared to treatment without acupuncture. However, the effect of laser acupuncture on the treatment of aphasia in children with CP is limited and there was no significant difference compared with treatment using language training alone (RR: 1.55; 95% CI: 1.00, 2.39; *p* = 0.05).

Outcomes	Illustrative Assumed risk Control	comparative risks* (95% Cl) Corresponding risk 1	Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	Comments
Total efficiency	Study pop	ulation	RR 1.25	4250	⊕⊕⊖⊖ Inul23	
RR	718 per 1000	898 per 1000 (869 to 926)	-(1.21 to 1.29)	(51 studies)	low	
	Moderate					
	730 per 1000	912 per 1000 (883 to 942)				
Development quotient - Adaptive behaviour MD		The mean development quotient - adaptive behaviour in the intervention groups was 7.46 higher (3.67 to 11.26 higher)		702 (9 studies)	⊕⊕⊝⊝ low <sup>3,4,5</sup>	
Development quotient - Gross motor behaviour MD		The mean development quotient - gross motor behaviour in the intervention groups was 4.86 higher (0.62 lower to 10.34 higher)		257 (3 studies)	⊕⊖⊖⊖ very low <sup>3,4,5,6</sup>	
Development quotient - Verbal behaviour MD		The mean development quotient - verbal behaviour in the intervention groups was 7.79 higher (5.66 to 9.92 higher)		1227 (15 studies)	⊕⊕⊝⊖ low <sup>3,4,5</sup>	
Development quotient - Fine motor behaviour MD		The mean development quotient - fine motor behaviour in the intervention groups was 4.66 higher (1.28 to 8.03 higher)		257 (3 studies)	⊕⊖⊖⊖ very low <sup>3,4,5,6</sup>	
Development quotient - Personal social behaviour MD		The mean development quotient - personal social behaviour in the intervention groups was 6.47 higher (2.38 to 10.55 higher)		561 (7 studies)	⊕⊕⊕⊝ moderate <sup>3,4,7</sup>	
The basis for the assumed risk (e.g. the isk in the comparison group and the relatin CI: Confidence interval; RR: Risk ratio; GRADE Working Group grades of evidence High quality: Further research is very unli Moderate quality: Further research is very like Low quality: Further research is very like Very low quality: Wer very uncertain a	kely to change ty to have an in about the estimation	ol group risk across studies) is provided in footnotes. The corresp ne intervention (and its 95% Cl). our confidence in the estimate of effect. important impact on our confidence in the estimate of effect and ma mportant impact on our confidence in the estimate of effect and is lik rate.	y change the except to change t	stimate.	lence interval) is based	on the assumed
<sup>1</sup> Most articles did not implement blinding an <sup>2</sup> Smaller P values and larger overlapping c <sup>3</sup> No explanation was provided <sup>4</sup> Most articles did not implement blinding an <sup>5</sup> Large P values and less overlap of confid <sup>6</sup> Small sample size	d did not ment onfidence inte d did not ment lence intervals	ion group concealment; and there were differences in ratings of tot rvals ion group concealment.	al efficiency ac	ross articles.		

# 4.7.2 Analysis of the efficacy of different treatment courses

Figure 9 shows a subgroup analysis of the effect of different treatment courses on the efficacy of aphasia treatment in children with CP. Among them, 35 studies (17–24, 28–31, 33, 36–39, 41, 46, 47, 49, 51, 52, 55–57, 59, 61–64, 66, 70–72) had a course of treatment of ≤3 months, and 15 studies (25–27, 32, 34, 35, 40, 42, 45, 48, 50, 53, 58, 65, 69) had a course of treatment of >3 months. The results showed significant improvement in aphasia in patients with acupuncture sessions ≤3 months (RR: 1.25; 95% CI: 1.20, 1.30; *p* < 0.00001;  $l^2 = 0\%$ ) and in patients with sessions >3 months (RR: 1.24; 95% CI: 1.17, 1.31; *p* < 0.00001;  $l^2 = 0\%$ ) compared with patients who did not receive acupuncture.

### 4.8 Sensitivity analysis and publication Bias

Sensitivity analysis was conducted by excluding each trial individually from the present study; the corresponding results were relatively robust (Figure 10).

Egger's test was employed to construct a funnel plot aimed at assessing the presence of publication bias, utilizing the metric of clinical effectiveness rate. Figure 11A illustrates that the dispersion of points within the funnel plot exhibited a perceptible asymmetry encircling the axis of symmetry, suggesting publication bias among these studies (p < 0.01; 95% CI: 1.53, 2.46). Using the trim and fill method for correction, after adding 19 articles (p < 0.01; 95% CI: 1.143, 1.207), it was consistent with the pre-correction conclusions, indicating that publication bias had no effect on the conclusion of this study; this is shown in Figure 11B.

## 4.9 Trial sequential analysis

In all, 51 RCTs (17–42, 45–53, 55–59, 61–66, 68–72) provided data on the overall clinical effectiveness rate, which was subjected to sequential analysis. This analysis was conducted with a type I error of 5% and a statistical power of 80%. The cumulative sample size was designated as the information axis, with the sample size also serving as the required information value (RIS). As depicted in Figure 12, the *Z*-curve crosses both the conventional and the TSA boundary value, underscoring the meta-analysis's statistical significance. Additionally, the *Z*-curve also crosses the RIS boundary value, indicating that the

study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI	M-H. Fixed, 95% Cl
1 0 0 0 1					-		
_i 2004	23	30	13	30	0.9%	1.77 [1.12, 2.79]	
_iu 2005	32	38	22	38	1.5%	1.45 [1.07, 1.97]	
Li 2007	22	30	12	30	0.8%	1.83 [1.12, 2.99]	
Yang 2007	47	49	67	76	3.5%	1.09 [0.98, 1.20]	-
Jiang 2009	45	47	36	46	2.4%	1.22 [1.04, 1.44]	
Li 2010	24	31	19	30	1.3%	1.22 [0.88, 1.70]	
Li1 2010	47	49	67	76	3.5%	1.09 [0.98, 1.20]	
Liang 2010	26	31	22	30	1.5%	1.14 [0.88, 1.49]	
Zou(acupuncture) 2013	31	40	20	39	1.3%	1.51 [1.07, 2.14]	
Zou(electroacupuncture) 2013	34	42	20	39	1.4%	1 58 [1 12 2 22]	
Fan 2014	40	50	35	50	2.3%	1 14 [0 91 1 44]	<b>—</b>
lin 2014	56	64	46	57	2.0%	1.08 [0.03, 1.97]	<b></b>
Mana 2014	10	15	40	15	0.00/	1.00 [0.55, 1.27]	
Meng 2014	13	15	12	15	0.8%	1.08 [0.79, 1.49]	
rang 2014	14	15	13	15	0.9%	1.08 [0.85, 1.37]	
LI 2015	37	45	27	45	1.8%	1.37 [1.04, 1.80]	
Li1 2015	17	20	11	20	0.7%	1.55 [1.00, 2.39]	
Li2 2015	69	80	55	80	3.6%	1.25 [1.06, 1.49]	
Liu 2015	23	30	19	30	1.3%	1.21 [0.86, 1.69]	
Wang 2015	28	30	22	30	1.5%	1.27 [1.01, 1.61]	
Zhang 2015	43	45	39	45	2.6%	1.10 [0.97, 1.26]	<u> </u>
Wang 2016	39	44	30	44	2.0%	1.30 [1.04, 1.63]	
Yu 2016	28	31	24	30	1.6%	1.13 [0.91, 1.40]	
Guo 2016	34	41	28	40	1.9%	1.18 [0.93, 1.51]	+
Li 2016	57	60	47	60	3.1%	1.21 [1.05, 1.40]	_ <b>_</b> _
Liao 2016	33	39	25	39	1.7%	1.32 [1.01, 1.73]	
Oin 2016	37	45	27	45	1.8%	1 37 [1 04 1 80]	
Tao 2016	25	30	21	30	1.4%	1 19 [0 90 1 58]	
Shao 2017	20	30	21	40	2.0%	1.15 [0.50, 1.50]	
Zhang 2017	25	20	27	20	1 00/	1.20 [1.00, 1.00]	
Zhang 2017	35	20	10	20	1.0%	1.30 [1.04, 1.02]	
Znao 2017	25	30	18	30	1.2%	1.39 [1.00, 1.94]	
Bao 2017	38	39	31	40	2.0%	1.26 [1.06, 1.50]	
Chen 2017	48	50	39	50	2.6%	1.23 [1.05, 1.44]	
Chen 2018	44	47	39	47	2.6%	1.13 [0.97, 1.31]	
Wu 2018	32	38	24	38	1.6%	1.33 [1.01, 1.76]	
Zhao 2018	45	49	37	49	2.4%	1.22 [1.02, 1.46]	
Ai 2018	14	15	7	15	0.5%	2.00 [1.15, 3.49]	
Jiao 2019	50	56	40	55	2.7%	1.23 [1.02, 1.48]	
Li 2019	37	40	32	40	2.1%	1.16 [0.97, 1.38]	
Yuan 2019	30	30	23	30	1.6%	1.30 [1.06, 1.59]	
Lian 2020	37	40	28	40	1.9%	1.32 [1.06, 1.65]	
L in 2020	39	43	30	43	2.0%	1.30 [1.04, 1.62]	· · · ·
Liu1 2020	50	54	41	53	2.0%	1 20 [1 02 1 41]	
Ma 2020	20	40	22	40	2.0%	1 15 [0 09 1 26]	L
Song 2020	20	40	20	40	1 50/	1 22 [1 00 1 72]	
Song 2020	29	33	22	33	1.5%	1.32 [1.00, 1.73]	
10 2020	23	24	18	24	1.2%	1.28 [1.00, 1.63]	
Qiu 2021	27	30	20	30	1.3%	1.35 [1.02, 1.79]	
Wang 2021	34	35	26	35	1.7%	1.31 [1.07, 1.60]	
Yu 2021	29	30	23	30	1.5%	1.26 [1.02, 1.55]	
Jin 2022	113	124	49	66	4.2%	1.23 [1.05, 1.43]	
Yang 2022	45	50	37	50	2.4%	1.22 [1.01, 1.47]	
Zhang 2022	44	46	38	46	2.5%	1.16 [1.00, 1.34]	<b>—</b>
Yang 2023	39	44	27	44	1.8%	1.44 [1.12, 1.87]	———
Total (95% CI)		2135		2115	100.0%	1.25 [1.21, 1.29]	♦
Total events	1907		1519				
Heterogeneity: Chi <sup>2</sup> = 47.14, df =	= 51 (P = 0.	63); I <sup>2</sup> =	0%			-	05 07 1 15 0
Test for overall effect: Z = 14.37	(P < 0.000	01)					0.5 0.7 1 1.5 2

sample size has reached the expected amount and no further RCT validation will be needed in the future.

# 5 Discussion

The results of this meta-analysis show that acupuncture combined with language training has a more favourable clinical efficiency compared with treatment using language training alone. From the GESELL development scale, acupuncture combined with language training was seen to be effective in improving the adaptive, verbal, fine motor, and personal social behaviours of aphasic children with CP, compared to treatment with language training alone. However, there is no significant difference between the effect of acupuncture combined with language training and that of language training alone, in terms of improving gross sports behaviour. In addition, compared with language training alone, acupuncture combined with language training can significantly improve the assessment of dysarthria, oral motor function, the expressive language development quotient, and the language comprehension development quotient.

Through a subgroup analysis of different types of acupuncture, it was found that, compared with language training alone, acupuncture,

	Exp	eriment	al		ontrol	T	MI-1 17	Mean Difference	V-	Mean Difference
tudy or Subgroup	Mean	SD	Total	Mean	SD	Iotal	Weight	IV. Random, 95% Cl	Year	IV, Random, 95% Cl
1.2.1 Adaptive behaviour						12/27				
Guo 2016	17.52	10.92	41	8.36	10.96	40	10.1%	9.16 [4.39, 13.93]	2016	
Liao 2016	6.94	5.59	39	3.21	5.76	39	11.4%	3.73 [1.21, 6.25]	2016	
Jiao 2019	18.2	8.03	56	10.79	11.36	55	10.8%	7.41 [3.74, 11.08]	2019	
Yuan 2019	33.04	7.14	30	22.31	6.37	30	10.9%	10.73 [7.31, 14.15]	2019	
Lin 2020	19.3	4.91	43	8.9	4.76	43	11.6%	10.40 [8.36, 12.44]	2020	-
Song 2020	24.29	3.62	33	7.76	3.71	33	11.7%	16.53 [14.76, 18.30]	2020	-
Oiu 2021	86	5 45	30	2 72	5 56	30	11.2%	5 88 [3 09 8 67]	2021	
Van 2021	1 11	6.64	30	2 14	7.04	30	10.9%	-1 03 [-4 49 2 43]	2021	
Vaca 2022	0.55	5.52	50	4.47	4.76	50	11 60/	4 09 12 06 6 401	2021	-
Subtotal (05% CI)	0.55	5.55	252	4.47	4.70	250	100.0%	4.00 [2.00, 0.10]	2022	-
Subtotal (95% CI)	2 - 140	00 46-	352	0.0000	4) 12 - (	350	100.0%	7.40 [3.07, 11.20]		
Test for overall effect: Z = 3.86 (	P = 0.00	.06, df = 101)	8 (P <	0.0000	1); 1- = §	95%				
1.2.2 Gross motor behaviour										
Jiao 2019	16.41	8.76	56	7.94	8.67	55	33.8%	8.47 [5.23, 11.71]	2019	
Lin 2020	15.5	5.08	43	7.8	5.01	43	36.2%	7.70 [5.57, 9.83]	2020	
Yan 2021	6.38	9.37	30	9.02	9.08	30	30.0%	-2 64 [-7 31 2 03]	2021	
Subtotal (95% CI)	0.00	0.01	129	0.02	0.00	128	100.0%	4.86 [-0.62, 10.34]	2021	
Heterogeneity: Tau2 - 20 29. Ch	2 = 17 3	A df - 1	) (P - 1	00021	12 = 999	×	100.010	100 [ 0.0m, 10.04]		
Test for overall effect: Z = 1.74 (	P = 0.08	3) )	- (r <sup>.</sup> - (	.0002);	1 - 00	70				
1.2.3 Verbal behaviour										
Liu 2005	17.95	17.12	38	6.37	13.61	38	4.3%	11.58 [4.63, 18.53]	2005	
Zou(acupuncture) 2013	11.9	10.61	42	7.9	12.38	39	5.6%	4.00 [-1.04, 9.04]	2013	
Zou(electroacupuncture) 2013	10.1	12.41	40	7.9	12.38	39	5.3%	2.20 [-3.27, 7.67]	2013	
Li1 2015	22.71	14.8	20	6.5	17.25	20	2.9%	16.21 [6.25, 26.17]	2015	
Liao 2016	7.61	6.56	39	3.47	6.63	39	7.0%	4.14 [1.21, 7.07]	2016	
Liu 2017	11 93	8.06	30	94	8 11	30	6.2%	2 53 [-1 56 6 62]	2017	
Zhao 2018	27 82	9.85	49	13 26	8.86	49	6.5%	14 56 [10 85 18 27]	2018	
liao 2019	17.02	7 14	56	6 11	6 38	55	7 3%	10 01 [8 30 13 43]	2010	
Vuon 2010	27.05	4.91	30	22.02	4.65	20	7 49/	5 02 12 52 9 241	2010	·
Lion 2020	14.1	10.00	40	7.0	10.40	40	E E0/	6 20 11 05 11 251	2019	
Lian 2020	14.1	10.99	40	7.9	12.40 E 00	40	3.5%	0.20 [1.05, 11.55]	2020	-
Cin 2020	15.8	4.91	43	1.8	5.08	43	7.5%	0.00 [5.89, 10.11]	2020	-
Song 2020	25.63	2.57	33	14.06	3.45	33	7.8%	11.57 [10.10, 13.04]	2020	
Qiu 2021	10.62	6.1	30	3.87	5.56	30	7.0%	6.75 [3.80, 9.70]	2021	
Yan 2021	10.18	10.77	30	6.39	10.09	30	5.4%	3.79 [-1.49, 9.07]	2021	
Yang 2022	8.67	6.67	50	5.32	5.87	50	7.3%	3.35 [0.89, 5.81]	2022	
Zhang 2022	30.48	8.96	46	14.78	6.52	46	6.9%	15.70 [12.50, 18.90]	2022	
Subtotal (95% CI)			616			611	100.0%	7.79 [5.66, 9.92]		•
Heterogeneity: $Tau^2 = 14.53$ ; Ch Test for overall effect: $Z = 7.18$ (	$i^2 = 104$ . P < 0.00	.56, df =	15 (P	< 0.000	01); I <sup>z</sup> =	86%				
124 Eine meter bebevieur	0.00									
1.2.4 Fine motor benaviour	10 - 1							0.00.00.00.00.00	00/5	
Jiao 2019	16.31	9.67	56	9.59	8.81	55	30.5%	6.72 [3.28, 10.16]	2019	
Lin 2020	14.9	5.92	43	8.8	4.81	43	37.2%	6.10 [3.82, 8.38]	2020	
Yan 2021	4.68	6.07	30	3.64	6.33	30	32.3%	1.04 [-2.10, 4.18]	2021	
Subtotal (95% CI)			129			128	100.0%	4.66 [1.28, 8.03]		-
Heterogeneity: Tau <sup>2</sup> = 6.61; Chi <sup>2</sup> Test for overall effect: $Z = 2.71$ (	= 7.95, P = 0.00	df = 2 (F	P = 0.0	2);   <sup>2</sup> = 7	75%					
125 Personal social behavior										
Vana 2007	10.00	5 90	50	4 00	6 07	50	14 00/	5 14 19 64 7 67	2007	
Line 2016	7.02	5.89	50	4.88	0.97	50	14.0%	0.14 [2.01, 7.67]	2007	
Liao 2016	7.21	7.92	39	1.07	8.58	39	13.7%	6.14 [2.48, 9.80]	2016	
Jiao 2019	8.95	8.65	56	4.41	6.94	55	14.3%	4.54 [1.63, 7.45]	2019	
Lin 2020	17.4	5.37	43	12.3	5.52	43	14.7%	5.10 [2.80, 7.40]	2020	
Song 2020	26.37	2.84	33	11.75	3.06	33	15.1%	14.62 [13.20, 16.04]	2020	
Qiu 2021	9.82	7.84	30	4.31	7.84	30	13.5%	5.51 [1.54, 9.48]	2021	
Yan 2021	6.24	6.16	30	2.53	6.03	30	14.2%	3.71 [0.63, 6.79]	2021	
Subtotal (95% CI)			281			280	100.0%	6.47 [2.38, 10.55]		-
Heterogeneity: Tau <sup>2</sup> = 28.20; Ch Test for overall effect: Z = 3.10 (	$i^2 = 105.$ P = 0.00	.36, df =	6 (P <	0.0000	1); l² = 9	94%				
	- 0.00	-/							1.	
										-20 -10 0 10 20 Favours (experimental) Favours (control)
										I AVUUTA ICAUCITICUTICITI FAVUUTS TUUTITUT
Test for subaroup differences: C	hi² = 3.0	1. df = 4	(P = 0)	).56). I <sup>z</sup>	= 0%					
Test for subaroup differences: C	hi² = 3.0	1. df = 4	4 (P = 0	).56). I²	= 0%					

electroacupuncture, scalp acupuncture, and auricular point seedpressing combined with language training can effectively improve the clinical efficacy of aphasia treatment in children with CP. However, there is no significant difference between laser acupuncture combined with language training and language training alone. The duration subgroup analysis found that acupuncture combined with language training significantly improved clinical efficiency for a treatment duration of both  $\leq$ 3 months and >3 months.

Studies have shown that acupuncture in the field of neurorehabilitation can promote the recovery of somatosensory or

motor function, repair nerve damage, and promote the repair of speech function (73, 74). Aphasia, a common neurological disorder, is caused by damage to the functional language areas of the brain and its associated language networks (73). Acupuncture can enhance blood circulation at the site of brain lesions and in the language regions of individuals with aphasia, promote the establishment of collateral circulation, activate the language centers, and revive neural conduction pathways (75). Evidence from multiple studies indicates that the integration of various acupuncture modalities with language training can markedly enhance the speech expression and comprehension in children with CP, while also

	Expe	eriment	tal	C	ontrol		1	Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI Year	IV, Random, 95% Cl
Liang 2010	1.99	0.68	31	0.97	0.66	30	12.3%	1.50 [0.93, 2.08] 2010	
Liu 2015	1.9	0.64	30	0.97	0.65	30	12.3%	1.42 [0.85, 1.99] 2015	
Du 2017	23.19	4.22	68	12.38	4.12	68	13.1%	2.58 [2.12, 3.04] 2017	
Wu 2018	1.93	0.65	38	0.6	0.65	38	12.4%	2.03 [1.47, 2.58] 2018	
Huang 2019	24.2	7.92	33	12.6	7.91	33	12.5%	1.45 [0.90, 1.99] 2019	
Jiao 2019	12.39	4.54	56	5.49	4.08	55	13.3%	1.59 [1.16, 2.02] 2019	
Ma 2020	23.29	6.01	40	11.31	5.86	40	12.5%	2.00 [1.46, 2.54] 2020	
Yang 2022	2.01	0.27	50	0.95	0.3	50	11.7%	3.69 [3.03, 4.34] 2022	
Total (95% CI)			346			344	100.0%	2.02 [1.54, 2.50]	• • •
Heterogeneity: Tau <sup>2</sup> =	0.41; Ch	$hi^2 = 46$	.07, df	= 7 (P <	0.000	01); l² :	= 85%		-4 -2 0 2 4
Test for overall effect:	Z = 8.19	(P < 0	.00001	)					Favours [experimental] Favours [control]
									· crosse forthermore deciment
	-			-					011 N
Chudu or Cubercur	Expe	eriment	Tatal	Co	ontrol	Tetal	Mainht	Std. Mean Difference	Std. Mean Difference
Liang 2010	2 45	0.72	21	1 1 0	0.71	20	11 10/	1 75 (1 16 2 25) 2010	
Liu 2015	2.45	0.72	31	1.18	0.71	30	11.1%	1.75 [1.10, 2.35] 2010	
Wang 2016	2.45	0.12	44	1.7	0.22	44	10.1%	4.87 [4.02 5 71] 2016	
Du 2017	23.06	3.44	68	10.3	3.71	68	11.3%	3.55 [3.00, 4.09] 2017	-
Wu 2018	2.39	0.71	38	1.08	0.72	38	11.3%	1.81 [1.28, 2.35] 2018	
Huang 2019	30.9	9.15	33	18.1	8.8	33	11.3%	1.41 [0.87, 1.95] 2019	
Jiao 2019	15.14	5.84	56	7.37	4.77	55	11.7%	1.45 [1.03, 1.87] 2019	-
Ma 2020	26.5	6.01	40	11.04	5.51	40	11.0%	2.66 [2.05, 3.26] 2020	
Yang 2022	2.36	0.5	50	1.13	0.46	50	11.3%	2.54 [2.01, 3.07] 2022	
Total (95% CI)			390			388	100.0%	2 40 [1 76 3 03]	•
Heterogeneity: Tau <sup>2</sup> =	0.85 Ch	$i^2 = 91$	65 df	= 8 (P <	0.000	01)· 12 :	= 91%	2.40 [1.10, 0.00]	
Test for overall effect:	Z = 7.40	(P < 0	.00001	)	0.000	.,,.	0170		-4 -2 0 2 4
	Expe	erimen	tal	с	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Expe Mean	erimen SD	tal Total	C Mean	ontrol SD	Total	Weight	Mean Difference IV. Random, 95% CI Year	Mean Difference IV. Random, 95% Cl
Study or Subgroup Liang 2010	Expe Mean 1.602	erimen SD 0.51	tal <u>Total</u> 31	C <u>Mean</u> 1.36	ontrol SD 0.51	Total 30	Weight 19.0%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010	Mean Difference IV. Random, 95% Cl
Study or Subgroup Liang 2010 Liu 2015	Expe Mean 1.602 1.56	erimen <u>SD</u> 0.51 0.49	tal <u>Total</u> 31 30	C <u>Mean</u> 1.36 1.36	ontrol SD 0.51 0.52	<u>Total</u> 30 30	Weight 19.0% 19.0%	Mean Difference IV. Random, 95% Cl Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015	Mean Difference IV, Random, 95% Cl
<u>Study or Subgroup</u> Liang 2010 Liu 2015 Wang 2016	Expe Mean 1.602 1.56 1.8	erimen SD 0.51 0.49 0.18	tal <u>Total</u> 31 30 44	C <u>Mean</u> 1.36 1.36 1.46	ontrol SD 0.51 0.52 0.19	Total 30 30 44	Weight 19.0% 19.0% 22.0%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016	Mean Difference IV, Random, 95% Cl
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018	Expe Mean 1.602 1.56 1.8 1.56	erimen SD 0.51 0.49 0.18 0.54	tal <u>Total</u> 31 30 44 38	C <u>Mean</u> 1.36 1.36 1.46 1.36	ontrol SD 0.51 0.52 0.19 0.51	Total 30 30 44 38	Weight 19.0% 19.0% 22.0% 19.4%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018	Mean Difference IV. Random, 95% Cl
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018	Expe Mean 1.602 1.56 1.8 1.56 1.85	erimen SD 0.51 0.49 0.18 0.54 0.54	tal <u>Total</u> 31 30 44 38 49	C <u>Mean</u> 1.36 1.36 1.46 1.36 0.88	ontrol SD 0.51 0.52 0.19 0.51 0.4	Total 30 30 44 38 49	Weight 19.0% 19.0% 22.0% 19.4% 20.7%	Mean Difference           IV. Random, 95% CI Year           0.24 [-0.01, 0.50]         2010           0.20 [-0.06, 0.46]         2015           0.34 [0.26, 0.42]         2016           0.20 [-0.04, 0.44]         2018           0.97 [0.80, 1.14]         2018	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI)	Expe Mean 1.602 1.56 1.8 1.56 1.85	erimen SD 0.51 0.49 0.18 0.54 0.45	tal <u>Total</u> 31 30 44 38 49 192	C Mean 1.36 1.36 1.46 1.36 0.88	ontrol SD 0.51 0.52 0.19 0.51 0.51 0.4	Total 30 30 44 38 49 191	Weight 19.0% 19.0% 22.0% 19.4% 20.7% 100.0%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69]	Mean Difference IV. Random, 95% Cl
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> =	Expo Mean 1.602 1.56 1.8 1.56 1.85	erimen SD 0.51 0.49 0.18 0.54 0.45	tal <u>Total</u> 31 30 44 38 49 192	C <u>Mean</u> 1.36 1.36 1.46 0.88	ontrol SD 0.51 0.52 0.19 0.51 0.4	Total 30 30 44 38 49 191	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference IV. Random, 95% Cl Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69]	Mean Difference IV. Random, 95% Cl
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> =	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cl	sp 0.51 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52	ttal 31 30 44 38 49 <b>192</b> 2.78, df	C 1.36 1.36 1.46 1.36 0.88 = 4 (P -	ontrol SD 0.51 0.52 0.19 0.51 0.4 < 0.000	<u>Total</u> 30 44 38 49 <b>191</b> 001); I <sup>2</sup>	Weight 19.0% 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference           IV. Random, 95% CI Year           0.24 [-0.01, 0.50]         2010           0.20 [-0.06, 0.46]         2015           0.34 [0.26, 0.42]         2016           0.20 [-0.04, 0.44]         2018           0.97 [0.80, 1.14]         2018           0.40 [0.11, 0.69]	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Exp <u>Mean</u> 1.602 1.56 1.8 1.56 1.85 0.10; Cł Z = 2.71	erimen SD 0.51 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52 I (P = 0	ttal 31 30 44 38 49 192 2.78, df 0.007)	C Mean 1.36 1.36 1.46 1.36 0.88 = 4 (P ·	ontrol SD 0.51 0.52 0.19 0.51 0.4	<u>Total</u> 30 44 38 49 <b>191</b> 001); I <sup>2</sup>	Weight 19.0% 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69]	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Expo Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cł Z = 2.71	erimen SD 0.51 0.49 0.54 0.45 0.45	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007)	C <u>Mean</u> 1.36 1.36 1.46 1.36 0.88	ontrol SD 0.51 0.52 0.19 0.51 0.4 < 0.000	Total 30 44 38 49 <b>191</b> 001); I <sup>2</sup>	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference IV. Random. 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69]	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Expo Mean 1.602 1.66 1.8 1.85 0.10; Cl Z = 2.71	erimen <u>SD</u> 0.51 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52 I (P = 0	tal 31 30 44 38 49 192 2.78, df 0.007)	C Mean 1.36 1.36 1.46 1.36 0.88 = 4 (P -	ontrol SD 0.51 0.52 0.19 0.51 0.4 < 0.000	Total 30 44 38 49 191 001); I <sup>2</sup>	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69]	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Expe Mean 1.602 1.56 1.85 1.56 1.85 0.10; Cł Z = 2.71	erimen <u>SD</u> 0.51 0.49 0.18 0.54 0.45 $hi^2 = 52$ I (P = 0) eriment	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007)	C Mean 1.36 1.36 1.46 1.36 0.88 = 4 (P -	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 < 0.000 Control	Total 30 44 38 49 191 101); I <sup>2</sup>	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69] Std. Mean Difference	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cł Z = 2.71 Expe Mean	erimen           SD           0.51           0.49           0.18           0.54           0.45           hi² = 52           I (P = 0)           eriment           SD	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u>	C Mean 1.36 1.46 1.36 0.88 = 4 (P -	ontrol SD 0.51 0.52 0.19 0.51 0.4 < 0.000	Total 30 44 38 49 191 191 001); I <sup>2</sup>	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69] Std. Mean Difference IV. Random, 95% CI Year	Mean Difference IV, Random, 95% CI -1 -0.5 0 0.5 1 Favours [experimental] Favours [control] Std. Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016	Expe Mean 1.602 1.56 1.85 1.85 0.10; Cł Z = 2.71 Expe Mean 13.6	erimen <u>SD</u> 0.51 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52 (P = 0) eriment <u>SD</u> 11.41	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39	C Mean 1.36 1.46 1.36 0.88 = 4 (P -	ontrol SD 0.51 0.52 0.19 0.51 0.4 < 0.000	Total 30 44 38 49 191 191 001); I <sup>2</sup> Total 39	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8%	Mean Difference           IV. Random, 95% CI Year           0.24 [-0.01, 0.50]         2010           0.20 [-0.06, 0.46]         2015           0.34 [0.26, 0.42]         2016           0.20 [-0.04, 0.44]         2018           0.97 [0.80, 1.14]         2018           0.40 [0.11, 0.69]	Mean Difference IV, Random, 95% CI -1 -0.5 0 0.5 1 Favours [experimental] Favours [control] Std. Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cl Z = 2.71 Expe Mean 13.6 51.19	erimen <u>SD</u> 0.51 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52 (P = 0) H (P = 0) <u>SD</u> 11.41 3.22	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33	CC <u>Mean</u> 1.36 1.46 0.88 = 4 (P · CC <u>Mean</u> 3.92 29.87	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 < 0.000 Control <u>SD</u> 10.96 3.06	<u>Total</u> 30 44 38 49 <b>191</b> 101); I <sup>2</sup> <u>Total</u> 39 33	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6%	Mean Difference           IV. Random, 95% CI Year           0.24 [-0.01, 0.50]         2010           0.20 [-0.06, 0.46]         2015           0.34 [0.26, 0.42]         2016           0.20 [-0.04, 0.44]         2018           0.97 [0.80, 1.14]         2018           0.40 [0.11, 0.69]         V.           Std. Mean Difference         IV. Random, 95% CI Year           0.86 [0.39, 1.32]         2016           6.71 [5.43, 7.98]         2019	Mean Difference IV, Random, 95% CI -1 -0.5 0 0.5 1 Favours [experimental] Favours [control] Std. Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% Cl) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cł Z = 2.71 Expe Mean 13.6 51.19 20.2	erimen $\frac{SD}{0.51}$ 0.49 0.54 0.54 0.45 hi <sup>2</sup> = 52 I (P = 0 I (P = 0	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 75	C <u>Mean</u> 1.36 1.36 1.36 0.88 = 4 (P · C <u>Mean</u> 29.87 8.7	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 < 0.000 SD 10.96 3.06 5.93	Total 30 44 38 49 191 1001); l <sup>2</sup> <u>Total</u> 39 33 75	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 21.0%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69] Std. Mean Difference IV. Random, 95% CI Year 0.86 [0.39, 1.32] 2019 1.81 [1.43, 2.19] 2020	Mean Difference IV, Random, 95% CI -1 -1 -0.5 Favours [experimental] Std. Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020 Song 2020	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cł Z = 2.71 Expe Mean 13.6 51.19 20.2 16.52	erimen $\frac{SD}{0.51}$ 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52 1 (P = 0 11.41 3.22 6.68 3.57	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 75 33	CC <u>Mean</u> 1.36 1.36 1.36 0.88 = 4 (P · C <u>C</u> C <u>Mean</u> 3.92 29.87 8.7 8.7	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 < 0.000 <u>SD</u> 0.51 0.4 < 0.000 <u>SD</u> 0.51 0.52 <u>SD</u> 0.51 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.52 <u>SD</u> 0.51 <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u> <u>SD</u>	Total 30 44 38 49 191 001); l <sup>2</sup> <u>Total</u> 39 33 75 33	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6% 21.0% 19.9%	Mean Difference           IV. Random. 95% CI Year           0.24 [-0.01, 0.50] 2010           0.20 [-0.06, 0.46] 2015           0.34 [0.26, 0.42] 2016           0.20 [-0.04, 0.44] 2018           0.97 [0.80, 1.14] 2018           0.40 [0.11, 0.69]           Std. Mean Difference           IV. Random. 95% CI Year           0.66 [0.39, 1.32] 2016           6.71 [5.43, 7.98] 2019           1.81 [1.43, 2.19] 2020           3.42 [2.65, 4.19] 2020	Mean Difference IV, Random, 95% CI -1 -0.5 0 0.5 1 Favours [experimental] Favours [control] Std. Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% Cl) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020 Song 2020 Qiu 2021	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cł Z = 2.71 Expe Mean 13.6 51.19 20.2 16.52 14.52	erimen <u>SD</u> 0.51 0.49 0.18 0.54 0.45 $hi^2 = 52$ ( (P = 0 <u>SD</u> 11.41 3.22 6.68 3.57 11.15	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 75 33 30	C Mean 1.36 1.36 1.36 0.88 = 4 (P · C Mean 29.87 8.7 4.11 3.21	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 <ontrol <u>SO</u> 0.000 <u>SO</u> 0.000 <u>SO</u> 0.51 0.4 <u>SO</u> 0.51 0.4 <u>SO</u> 0.51 0.52 0.55 0.52 0.55 0.</ontrol 	Total 30 44 38 49 191 001); l <sup>2</sup> <u>Total</u> 39 33 75 33 30	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6% 21.0% 19.9% 20.6%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69] Std. Mean Difference IV. Random, 95% CI Year 0.86 [0.39, 1.32] 2016 6.71 [5.43, 7.98] 2019 1.81 [1.43, 2.19] 2020 3.42 [2.65, 4.19] 2020 1.02 [0.48, 1.57] 2021	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020 Song 2020 Qiu 2021 Total (95% CI)	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cl Z = 2.71 Expe Mean 13.6 51.19 20.2 16.52 14.52	erimen $\frac{SD}{0.51}$ 0.49 0.18 0.54 0.45 hi <sup>2</sup> = 52 ( (P = 0) ( P = 0) 11.41 3.22 6.68 3.57 11.15	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 75 33 30 210	CC <u>Mean</u> 1.36 1.46 1.36 0.88 = 4 (P · CC <u>Mean</u> 3.92 29.87 8.7 4.11 3.21	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 < 0.000 <u>SD</u> 10.96 3.06 5.93 3.61 10.63	Total 30 30 44 38 49 191 001); l <sup>2</sup> <u>Total</u> 39 33 75 33 30 210	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6% 21.0% 19.9% 20.6% 100.0%	Mean Difference IV. Random, 95% CI Year 0.24 [-0.01, 0.50] 2010 0.20 [-0.06, 0.46] 2015 0.34 [0.26, 0.42] 2016 0.20 [-0.04, 0.44] 2018 0.97 [0.80, 1.14] 2018 0.40 [0.11, 0.69] Std. Mean Difference IV. Random, 95% CI Year 0.86 [0.39, 1.32] 2016 6.71 [5.43, 7.98] 2019 1.81 [1.43, 2.19] 2020 3.42 [2.65, 4.19] 2020 1.02 [0.48, 1.57] 2021 2.63 [1.36, 3.90]	Mean Difference IV, Random, 95% CI -1 -0.5 0 0.5 1 Favours [experimental] Favours [control] Std. Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020 Song 2020 Qiu 2021 Total (95% CI) Heterogeneity: Tau <sup>2</sup> =	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cl Z = 2.71 Expe Mean 13.6 51.19 20.2 16.52 14.52	erimen $\frac{SD}{0.51}$ 0.49 0.18 0.54 0.45 1.12 = 52 11.41 3.22 6.68 3.57 11.15 i <sup>2</sup> = 97	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 375 33 30 <b>210</b> 23, df -	C Mean 1.36 1.36 1.36 0.88 = 4 (P · C Mean 2.9.87 8.7 4.11 3.21	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 <ol> <li>control <u>SD</u></li> <li>SD 10.96 5.93 3.61 10.63</li> </ol>	Total 30 30 44 38 49 191 1001); l <sup>2</sup> Total 39 33 375 33 30 210 1): l <sup>2</sup>	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6% 21.0% 19.9% 20.6% 100.0% 96%	Mean Difference           IV. Random, 95% CI Year           0.24 [-0.01, 0.50] 2010           0.20 [-0.06, 0.46] 2015           0.34 [0.26, 0.42] 2016           0.20 [-0.04, 0.44] 2018           0.97 [0.80, 1.14] 2018           0.40 [0.11, 0.69]           Std. Mean Difference           IV. Random, 95% CI Year           0.86 [0.39, 1.32] 2016           6.71 [5.43, 7.98] 2019           1.81 [1.43, 2.19] 2020           3.42 [2.65, 4.19] 2020           1.02 [0.48, 1.57] 2021           2.63 [1.36, 3.90]	Mean Difference IV, Random, 95% CI
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% Cl) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020 Song 2020 Qiu 2021 Total (95% Cl) Heterogeneity: Tau <sup>2</sup> =	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cl Z = 2.71 Expe Mean 13.6 51.19 20.2 16.52 14.52	erimen $\frac{SD}{0.51}$ 0.49 0.49 0.48 0.45 1.45 erimen $\frac{SD}{11.41}$ 3.22 6.68 3.57 11.15 $i^2 = 97$	tal <u>Total</u> 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 75 33 30 210 23, df =	CC Mean 1.36 1.36 1.36 0.88 = 4 (P · C Mean 3.92 29.87 8.7 8.7 4.11 3.21	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 <ontrol <u>SD</u> 6 3.06 5.93 3.61 10.63 0.0000</ontrol 	Total 30 30 44 38 49 191 1001); l <sup>2</sup> Total 39 33 5 5 33 30 210 210 1); l <sup>2</sup>	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6% 21.0% 19.9% 20.6%	Mean Difference           IV. Random. 95% CI Year           0.24 [-0.01, 0.50] 2010           0.20 [-0.06, 0.46] 2015           0.34 [0.26, 0.42] 2016           0.20 [-0.04, 0.44] 2018           0.97 [0.80, 1.14] 2018           0.40 [0.11, 0.69]           Std. Mean Difference           IV. Random, 95% CI Year           0.86 [0.39, 1.32] 2016           6.71 [5.43, 7.98] 2019           3.42 [2.65, 4.19] 2020           3.42 [2.65, 4.19] 2020           1.02 [0.48, 1.57] 2021	Mean Difference IV, Random, 95% CI -1 -0.5 Favours [experimental] Std. Mean Difference IV, Random, 95% CI -1 -1 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -0.5 -1 -1 -0.5 -1 -0.5 -1 -1 -0.5 -1 -1 -0.5 -1 -1 -0.5 -1 -1 -0.5 -1 -1 -0.5 -1 -1 -0.5 -1 -1 -0.5 -1 -1 -1 -0.5 -1 -1 -1 -0.5 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1
Study or Subgroup Liang 2010 Liu 2015 Wang 2016 Wu 2018 Zhao 2018 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Study or Subgroup Liao 2016 Huang 2019 Liu 2020 Song 2020 Qiu 2021 Total (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Expe Mean 1.602 1.56 1.8 1.56 1.85 0.10; Cl Z = 2.71 Expe Mean 13.6 51.19 20.2 16.52 14.52 14.52	erimen $\frac{SD}{0.49}$ 0.49 0.48 0.45 1.141 3.22 6.68 3.57 11.15 i <sup>2</sup> = 97. (P < 0.	tal <u>Total</u> 31 30 44 38 49 <b>192</b> 2.78, df 0.007) tal <u>Total</u> 39 33 75 33 30 <b>210</b> 23, df = 0001)	CC Mean 1.36 1.36 1.36 1.36 0.88 = 4 (P · 4.11 3.21 - 4.11 3.21	ontrol <u>SD</u> 0.51 0.52 0.19 0.51 0.4 <ontrol <u>SD</u> 10.96 3.06 5.93 3.61 10.63 0.0000</ontrol 	Total 30 44 38 49 191 001); l <sup>2</sup> Total 39 33 75 33 30 210 1); l <sup>2</sup> =	Weight 19.0% 22.0% 19.4% 20.7% 100.0% = 92% Weight 20.8% 17.6% 21.0% 19.9% 20.6% 100.0% 96%	Mean Difference           IV. Random, 95% CI Year           0.24 [-0.01, 0.50] 2010           0.20 [-0.06, 0.46] 2015           0.34 [0.26, 0.42] 2016           0.20 [-0.04, 0.44] 2018           0.97 [0.80, 1.14] 2018           0.40 [0.11, 0.69]           Std. Mean Difference           IV. Random, 95% CI Year           0.86 [0.39, 1.32] 2016           6.71 [5.43, 7.98] 2019           1.81 [1.43, 2.19] 2020           3.42 [2.65, 4.19] 2020           1.02 [0.48, 1.57] 2021           2.63 [1.36, 3.90]	Mean Difference IV, Random, 95% CI -1 -0.5 Favours [experimental] Std. Mean Difference IV, Random, 95% CI -1 Favours [control] -1 Favours [experimental] Favours [control]

effectively mitigating dysarthria (62, 67, 70). The main types of acupuncture used in the RCTs included in this study were body acupuncture, scalp acupuncture, and electroacupuncture. The main mechanisms of body acupuncture are stimulating the peripheral nerves, improving local blood circulation, accelerating the local activities of the cerebral cortex, strengthening the protection of the cranial nerve, attenuating the negative effects on local nerves caused by the release of

lipid peroxidation, and promoting the functional recovery of the cranial nerve (76). Acupuncture can also extend the brain nerve survival cycle and improve the release of the nerve growth factor, by improving the adverse symptoms of CP (77). Modern studies show that scalp acupuncture can effectively activate the cerebral cortex function, inhibit nerve cell apoptosis, promote nerve regeneration and the growth of endogenous neural stem cells, regulate brain cell energy metabolism, and

array of anogroup	Evente	Total	Evente	Total	Weight	M-H Fixed 95% CI	M-H Fixed 05% CI
1.7.1 Acupuncture	Lyents	Iotal	events	rotal	weight	m-ri, rixeu, 95% Cl	m-n, Fixeu, 95% UI
Li 2004	23	30	13	30	1.4%	1 77 [1 12 2 79]	
Liu 2005	32	38	22	38	2.4%	1.45 [1.07, 1.97]	
Li 2007	22	30	12	30	1.3%	1.83 [1.12, 2.99]	
Jiang 2009	45	47	36	46	3.9%	1.22 [1.04, 1.44]	
Zou(acupuncture) 2013	34	42	20	39	2.2%	1.58 [1.12, 2.22]	
Fan 2014	40	50	35	50	3.8%	1.14 [0.91, 1.44]	
Meng 2014	13	15	12	15	1.3%	1.08 [0.79, 1.49]	
Yang 2014	14	15	13	15	1.4%	1.08 [0.85, 1.37]	
Zhang 2015	43	45	39	45	4 2%	1 10 [0 97 1 26]	
Li 2015	37	45	27	45	2 9%	1 37 [1 04 1 80]	
Lin 2015	23	30	10	30	2.0%	1 21 [0 86, 1 69]	
Wang 2015	28	30	22	30	2.0%	1 27 [1 01 1 61]	
Guo 2016	34	41	28	40	3.0%	1 18 [0 03 1 51]	
Liao 2016	33	30	20	30	2 7%	1 32 [1 01 1 73]	
Oin 2016	37	45	23	45	2.0%	1 37 [1 04 1 90]	
Tao 2016	25	30	21	30	2.3%	1.10 [0.00, 1.58]	
Wang 2016	20	44	20	44	2.0 /0	1.19 [0.50, 1.50]	
Vu 2016	28	31	24	30	2 6%	1.13 [0.01, 1.40]	
7bass 2017	20	20	24	20	2.0%	1.13 [0.91, 1.40]	Col and Col an
Zhan 2017	35	30	10	30	2.9%	1.30 [1.04, 1.02]	
Rac 2017	20	30	10	40	2.3%	1.39 [1.00, 1.94]	
Shao 2017	30	39	31	40	3.3%	1.20 [1.00, 1.50]	
Zhao 2018	30	40	31	40	J. 00/	1 22 [1.00, 1.50]	
Chap 2018	45	49	37	49	4.0%	1 13 (0 07 4 34)	
We 2019	44	4/	39	4/	4.270	1.13 [0.97, 1.31]	
line 2010	52	38	24	38	2.0%	1.33 [1.01, 1.76]	
Lian 2020	50	50	40	00	4.3%	1.23 [1.02, 1.48]	
Lian 2020	37	40	28	40	3.0%	1.32 [1.06, 1.65]	
Ma 2020	50	54	41	53	4.4%	1.20 [1.02, 1.41]	
Ma 2020	38	40	33	40	3.5%	1.15 [0.98, 1.35]	
Song 2020	29	33	22	33	2.4%	1.32 [1.00, 1.73]	
Yu 2021	29	30	23	30	2.5%	1.26 [1.02, 1.55]	
QIU 2021	21	30	20	30	2.1%	1.35 [1.02, 1.79]	
Vvang 2021	34	35	20	35	2.8%	1.31 [1.07, 1.60]	
Znang 2022	44	46	38	40	4.1%	1.16 [1.00, 1.34]	
Subtotal (95% CI)	39	1335	21	1320	100.0%	1.44 [1.12, 1.07]	•
Total events	1104	1000	020	1020	100.070	1.2.1 [1.2.2, 1.02]	
Test for overall effect: Z = 11.79 (F 1.7.2 Electroacupuncture	< 0.0000	)1)					
Lou(electroacupuncture) 2013	31	40	20	39	32.8%	1.51 [1.07, 2.14]	
1	00	00	00	00	00 40/	4 00 14 00 4 501	
Yuan 2019	30	30	23	30	38.1%	1.30 [1.06, 1.59]	
/uan 2019 /u 2020 Subtotal (95% CI)	30 23	30 24	23 18	30 24 93	38.1% 29.1%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events	30 23 84	30 24 94	23 18 61	30 24 93	38.1% 29.1% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60]	•
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>p</sup> = 0.82, df = 2 Fest for overall effect: Z = 3.83 (P	30 23 84 (P = 0.66) = 0.0001)	30 24 94 ; I <sup>2</sup> = 0%	23 18 61	30 24 93	38.1% 29.1% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60]	•
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture	30 23 (P = 0.66) = 0.0001)	30 24 94 ; I <sup>2</sup> = 0%	23 18 61	30 24 93	38.1% 29.1% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007	30 23 (P = 0.66) = 0.0001) 47	30 24 94 ; I <sup>2</sup> = 0% 49	23 18 61 67	30 24 93 76	38.1% 29.1% 100.0% 11.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60]	•
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010	30 23 (P = 0.66) = 0.0001) 47 26	30 24 94 ; I <sup>2</sup> = 0% 49 31	23 18 61 67 22	30 24 93 76 30	38.1% 29.1% 100.0% 11.0% 4.7%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.09 [0.98, 1.20] 1.14 [0.88, 1.49]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010	30 23 (P = 0.66) = 0.0001) 47 26 24	30 24 94 ; I <sup>2</sup> = 0% 49 31 31	23 18 61 67 22 19	30 24 93 76 30 30	38.1% 29.1% 100.0% 11.0% 4.7% 4.1%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.09 [0.98, 1.20] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 1 2010	30 23 (P = 0.66) = 0.0001) 47 26 24 47	30 24 94 ; l <sup>2</sup> = 0% 49 31 31 49	23 18 61 67 22 19 67	30 24 93 76 30 30 76	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.09 [0.98, 1.20] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Jin 2014	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56	30 24 94 ; I <sup>2</sup> = 0% 49 31 31 49 64	23 18 61 67 22 19 67 46	30 24 93 76 30 30 76 57	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.09 [0.98, 1.20] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>p</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li 2 2015	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69	30 24 94 ; l <sup>2</sup> = 0% 49 31 31 49 64 80	23 18 61 67 22 19 67 46 55	30 24 93 76 30 30 76 57 80	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.09 [0.98, 1.20] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 1 2010 Jin 2014 Li 2 2015 Li 2016	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57	30 24 94 ; l <sup>2</sup> = 0% 49 31 31 49 64 80 60	23 18 61 67 22 19 67 46 55 47	30 24 93 76 30 30 76 57 80 60	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 9.9%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.06, 1.40]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2015 Li 2015 Li 2016 Chen 2017	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48	30 24 94 ; I <sup>2</sup> = 0% 49 31 31 49 64 80 60 50	23 18 61 67 22 19 67 46 55 47 39	30 24 93 76 30 30 76 57 80 60 50	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 10.2% 10.2% 9.9% 8.2%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40]	
Yuan 2019 Yu 2020 Substai (95% CI) Total events Heterogeneity: Chi <sup>p</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li2 2015 Li 2016 Chen 2017 A i 2018	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14	30 24 94 ; I <sup>2</sup> = 0% 49 31 31 49 64 80 60 50 15	23 18 61 67 22 19 67 46 5 47 39 7	30 24 93 76 30 30 76 57 80 60 50 15	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 8.2% 1.5%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.93, 1.27] 1.09 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 1.23 [1.05, 1.44]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>p</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2019	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37	30 24 94 ; l <sup>2</sup> = 0% 49 31 31 49 64 80 60 50 15 40	23 18 61 67 22 19 67 46 55 57 47 39 7 32	30 24 93 76 30 30 76 57 80 60 50 15 40	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 9.9% 8.2% 1.5% 6.7%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 2.00 [1.15, 3.49]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45	30 24 94 ; l <sup>2</sup> = 0% 49 31 31 49 64 80 60 50 15 40 50	23 18 61 67 229 67 46 55 47 39 7 32 37	30 24 93 76 30 76 57 80 60 50 15 40 50	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 9.9% 8.2% 1.5% 6.7% 6.7% 7.8%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 2.00 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li2 2015 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Jin 2022	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113	30 24 94 ;   <sup>2</sup> = 0% 49 31 31 31 49 64 80 60 50 15 40 50 124	23 18 61 67 22 19 67 455 47 39 7 32 37 32 37 49	30 24 93 76 30 30 76 57 80 60 50 15 40 50 66	38.1% 29.1% 100.0% 11.0% 4.7% 4.7% 11.0% 10.2% 11.5% 9.9% 8.2% 1.5% 6.7% 7.8% 13.4%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.93, 1.27] 1.05 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 1.20 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>P</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Jin 2022 Subtotal (95% CI)	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113	30 24 94 ; I <sup>2</sup> = 0% 49 31 31 31 49 64 80 60 50 15 40 50 124 643	23 18 61 67 22 19 67 46 55 47 39 7 32 37 49	30 24 93 76 30 30 76 57 80 60 50 15 40 50 66 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 11.0% 11.5% 8.2% 1.5% 6.7% 7.8% 13.4% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.98, 1.20] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 2.00 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li 2015 Li 2016 Chen 2017 Al 2018 Li 2019 Yang 2022 Jin 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = Test for overall effect: Z = 6.67 (P	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113 583 11 (P = 0.4 < 0.00001	30 24 94 (1 <sup>2</sup> = 0%) 49 31 31 31 49 64 80 60 50 15 40 50 124 643 11); 1 <sup>2</sup> = 1 (1); 1 <sup>2</sup> = 1 )	23 18 61	30 24 93 76 30 30 76 57 80 60 50 15 40 50 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 11.5% 9.9% 8.2% 1.5% 6.7% 7.8% 13.4% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 1.20 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = 1 Test for overall effect: Z = 6.67 (P	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 69 57 48 14 37 45 113 583 11 (P = 0.4 < 0.0001)	30 24 94 (;  2 = 0% 49 31 31 49 64 80 60 50 15 40 60 55 50 124 643 11);  2 = ()	23 18 61 67 22 19 67 25 55 47 39 7 32 37 49 487 487	30 24 93 76 30 76 57 80 60 50 15 40 50 66 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 9.9% 8.2% 6.7% 7.8% 13.4% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.98, 1.20] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 2.00 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.29 [1.13, 1.25]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2015 Li 2015 Li 2016 Chen 2017 Al 2018 Li 2019 Yang 2022 Jin 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113 583 511 (P = 0.4 < 0.0001) ing 30	30 24 94 (;   <sup>2</sup> = 0% 49 31 31 31 49 64 80 60 50 124 643 (11);   <sup>2</sup> = 1;	23 18 61 67 22 19 67 46 55 47 39 7 32 37 49 487 3%	30 24 93 76 30 30 76 50 50 15 40 66 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 8.2% 1.5% 6.7% 7.8% 13.4% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.22 [1.05, 1.40] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2015 Li 2016 Chen 2017 Ai 2018 Li 2018 Li 2018 Li 2019 Yang 2022 Jin 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = 1 Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% CI)	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 99 57 48 11 37 45 113 583 11 (P = 0.4 < 0.00001 ing 39	30 24 94 (;   <sup>2</sup> = 0% 49 31 31 31 49 64 80 60 50 15 40 50 50 124 643 11);   <sup>2</sup> = :	23 18 61 67 22 19 67 46 47 39 7 32 37 49 487 487 33%	30 24 93 76 30 30 76 57 80 60 50 15 40 50 66 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.0% 8.2% 1.5% 6.7% 7.8% 13.4% 100.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.44 [0.88, 1.40] 1.42 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.06, 1.49] 1.21 [1.06, 1.40] 1.23 [1.05, 1.44] 2.00 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25]	
Yuan 2019 Yuan 2019 Yuan 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>P</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li 2015 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Jun 2022 Subtotal (95% CI) Total events Lin 2020 Subtotal (95% CI) Total events	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 69 57 48 14 37 45 69 57 48 14 37 45 69 57 48 14 37 45 40 53 11 (P = 0.60) 9 57 49 8 14 8 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 8 14 9 57 9 14 9 57 9 14 14 14 14 14 14 14 14 14 14 14 14 14	30 24 94 (1) 31 31 31 31 49 64 80 60 50 15 124 643 (1);  2 = : () )	23 18 61 67 22 19 67 75 47 39 97 32 37 487 33% 487 30 30	30 24 93 76 30 30 76 57 80 60 50 57 80 60 50 66 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 9.9% 8.2% 6.7% 7.8% 10.0% 13.4% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.98, 1.20] 1.25 [1.06, 1.49] 1.21 [1.05, 1.44] 2.00 [1.15, 3.49] 1.22 [1.01, 1.47] 1.22 [1.01, 1.47] 1.22 [1.01, 1.47] 1.25 [1.05, 1.43] 1.19 [1.13, 1.25]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li 2015 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Jin 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = 1 Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% CI) Total events Heterogeneity: Not applicable Test for overall effect: Z = 2.35 (P	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113 583 11 (P = 0.4 < 0.00001 ing 39 39 = 0.02)	30 24 94 (1) 31 31 31 31 49 64 80 60 50 15 124 643 (1);   <sup>2</sup> = () ()	23 18 61 67 22 19 67 7 46 55 47 39 7 32 37 39 49 487 3% 30 30 30	30 24 93 76 30 76 57 80 50 15 40 50 66 630	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 8.2% 6.7% 7.8% 13.4% 100.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.93, 1.27] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.23 [1.05, 1.44] 1.23 [1.05, 1.44] 1.23 [1.05, 1.44] 1.23 [1.05, 1.43] 1.22 [1.05, 1.43] 1.22 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.04, 1.62] 1.30 [1.04, 1.62]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2014 Li 2015 Li 2016 Chen 2017 A i 2018 Li 2019 Yang 2022 Juhtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = 7 Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% CI) Total events Heterogeneity: Not applicable Test for overall effect: Z = 2.35 (P	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 583 11 (P = 0.4 < 0.00001 ing 39 39 = 0.02)	30 24 94 (1) (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	23 18 61 67 22 19 67 7 39 7 32 37 37 34 887 33% 487 30 30 30	30 24 93 76 30 76 57 80 50 50 15 40 50 66 630 43 43	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 11.5% 9.9% 8.2% 6.7% 7.8% 10.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.98, 1.20] 1.25 [1.06, 1.49] 1.21 [1.05, 1.44] 2.00 [1.15, 3.49] 1.22 [1.01, 1.47] 1.22 [1.01, 1.47] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = 1 Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% CI) Total events Heterogeneity: Not applicable Test for overall effect: Z = 2.35 (P 1.7.5 Laser acupuncture Li 2015	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113 37 45 113 583 11 (P = 0.4 < 0.00001) ing 39 39 39 = 0.02)	30 24 94 (; P = 0%) 49 31 31 31 49 64 80 60 50 50 55 40 55 40 55 40 55 40 55 40 55 40 55 43 43 43	23 18 61 67 22 19 67 46 55 57 7 32 37 49 487 33% 487 33% 30 30	30 24 93 76 30 30 30 76 80 60 50 50 60 50 630 43 43 43	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 8.2% 1.5% 9.9% 8.2% 1.5% 6.7% 7.8% 13.4% 100.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.98, 1.20] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 2.00 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25] 1.30 [1.04, 1.62] 1.30 [1.04, 1.62]	
Yuan 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Jin 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% CI) Total events Heterogeneity: Not applicable Test for overall effect: Z = 2.35 (P 1.7.5 Laser acupuncture Li 2015	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 37 45 113 583 11 (P = 0.4 < 0.00001 ing 39 39 = 0.02) 17	30 24 94 (;   <sup>2</sup> = 0% 49 31 31 31 49 64 80 60 50 124 643 (1);   <sup>2</sup> = : () )	23 18 61 9 7 22 19 67 7 21 9 7 32 37 49 7 32 37 49 8 7 32 37 30 30 30 11	30 24 93 76 30 76 50 50 60 50 50 66 630 43 43 43	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 8.2% 1.5% 6.7% 7.8% 13.4% 100.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.14 [0.88, 1.40] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.22 [1.05, 1.40] 1.23 [1.05, 1.41] 2.00 [1.15, 3.49] 1.16 [0.97, 1.38] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25] 1.30 [1.04, 1.62] 1.30 [1.04, 1.62] 1.30 [1.04, 1.62]	
Yua 2019 Yu 2020 Subtotal (95% Cl) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Subtotal (95% Cl) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% Cl) Total events Heterogeneity: Not applicable Test for overall effect: Z = 2.35 (P 1.7.5 Laser acupuncture Li 2015 Subtotal (95% Cl) Total events Heterogeneity: Not applicable	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113 583 11 (P = 0.4 < 0.00001 ing 39 39 = 0.02) 17 17	30 24 94 (;   <sup>2</sup> = 0%) 49 31 31 31 49 64 80 60 50 50 15 40 65 50 124 643 11);   <sup>2</sup> = 1 () 24 94 94 94 94 94 94 94 94 94 94 94 94 94	23 18 61 67 22 19 67 46 55 47 39 7 32 37 49 7 32 37 49 8 30 30 30 11 11	30 24 93 76 30 30 76 57 80 60 50 50 50 66 630 43 43 43	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 1.5% 6.7% 7.8% 13.4% 100.0% 100.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.98, 1.20] 1.25 [1.06, 1.49] 1.21 [1.05, 1.40] 1.23 [1.05, 1.44] 1.23 [1.05, 1.44] 1.23 [1.05, 1.43] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.19 [1.13, 1.25] 1.30 [1.04, 1.62] 1.30 [1.04, 1.62] 1.55 [1.00, 2.39]	
Yua 2019 Yu 2020 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 0.82, df = 2 Test for overall effect: Z = 3.83 (P 1.7.3 Scalp acupuncture Yang 2007 Liang 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2010 Li 2016 Chen 2017 Ai 2018 Li 2019 Yang 2022 Subtotal (95% CI) Total events Heterogeneity: Chi <sup>2</sup> = 11.39, df = Test for overall effect: Z = 6.67 (P 1.7.4 Auricular point seed-press Lin 2020 Subtotal (95% CI) Total events Heterogeneity: Not applicable Test for overall effect: Z = 2.35 (P 1.7.5 Laser acupuncture Li 2015 Subtotal (95% CI) Total events Heterogeneity: Not applicable Test for overall effect: Z = 1.95 (P	30 23 84 (P = 0.66) = 0.0001) 47 26 24 47 56 69 57 48 14 37 45 113 583 11 (P = 0.4 < 0.00001 ing 39 = 0.02) 17 17 17 = 0.05)	30 24 94 31 31 31 49 64 80 60 50 50 15 40 65 50 124 643 41); I <sup>2</sup> = 1 24 43 43	23 18 61 67 22 19 67 46 55 47 39 7 32 37 49 7 32 37 49 8 30 30 30 11 11	30 24 93 76 30 30 76 57 80 60 50 50 50 66 630 43 43 43 20 20	38.1% 29.1% 100.0% 11.0% 4.7% 4.1% 11.0% 10.2% 8.2% 6.7% 7.8% 13.4% 100.0% 100.0% 100.0%	1.30 [1.06, 1.59] 1.28 [1.00, 1.63] 1.36 [1.16, 1.60] 1.36 [1.16, 1.60] 1.14 [0.88, 1.49] 1.22 [0.88, 1.70] 1.09 [0.98, 1.20] 1.08 [0.98, 1.20] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.21 [1.05, 1.44] 1.21 [1.05, 1.44] 1.23 [1.05, 1.43] 1.22 [1.01, 1.47] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.23 [1.05, 1.43] 1.30 [1.04, 1.62] 1.30 [1.04, 1.62] 1.30 [1.04, 1.62]	

ects of different acupuncture types t plot comparing

Study or St	August an Column	Experime	ental	Contro	ol		Risk Ratio	Risk Ratio
$ \begin{array}{c} 1.81 \leq 3 \text{ min} \\ 1.2004 & 23 & 30 & 13 & 30 & 1.3\% & 1.77 (1, 12, 2.79 ] \\ 1.2007 & 22 & 30 & 12 & 30 & 1.2\% & 1.85 (1.12, 2.99 ] \\ 1.2010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (1.08, 1.44 ] \\ 1.2010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (1.08, 1.44 ] \\ 1.2010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (1.08, 1.44 ] \\ 1.2010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (1.08, 1.44 ] \\ 1.2010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (1.08, 1.44 ] \\ 1.2010 & 24 & 31 & 12 & 1.2\% & 1.00 (0.96, 1.20 ] \\ 1.2016 & 27 & 40 & 67 & 76 & 5.3\% & 1.00 (0.96, 1.20 ] \\ 1.20215 & 12 & 30 & 11 & 12 & 1.2\% & 1.00 (0.86, 1.20 ] \\ 1.20216 & 23 & 31 & 24 & 30 & 1.5\% & 1.51 (1.00, 1.06, 1.68 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 (1.06, 1.66 ] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.8\% & 1.22 (1.02, 1.46 ] \\ 1.2019 & 37 & 40 & 3.2 & 40 & 3.3\% & 1.30 (1.04, 1.62 ] \\ 1.2019 & 37 & 40 & 3.2 & 40 & 3.3\% & 1.16 (0.97, 1.36 ] \\ 1.2020 & 39 & 43 & 30 & 43 & 3.1\% & 1.30 (1.04, 1.62 ] \\ 1.2020 & 39 & 43 & 30 & 43 & 3.1\% & 1.25 (1.00, 1.73 ] \\ 1.2020 & 39 & 43 & 30 & 43 & 3.1\% & 1.25 (1.00, 1.73 ] \\ 1.2020 & 39 & 43 & 30 & 43 & 3.1\% & 1.25 (1.00, 1.61 ] \\ 1.2016 & 250 & 55 & 50 & 7.5\% & 1.56 (1.12, 2.14 ] \\ 1.2017 & 31 & 39 & 31 & 40 & 6.2\% & 1.26 (1.06, 1.50 ] \\ 1.2020 & 23 & 24 & 42 & 7\% & 1.25 (1.06, 1.61 ] \\ 1.2016 & 25 & 30 & 22 & 30 & 4.5\% & 1.27 (1.01, 1.61 ] \\ 1.2016 & 250 & 37 & 46 & 34 & 57\% & 1.26 (1.06, 1.50 ] \\ 1.2020 & 33 & 44 & 27\% & 1.48 (1.20, 1.15, 1.41 ] \\ 1.2016 & 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.26 (1.06, 1.50 ] \\ 1.20210 & 23 & 23 & 24 & 35$	study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% Cl	M-H, Fixed, 95% Cl
$ \begin{array}{c} 12004 & 23 & 30 & 13 & 30 & 1.3\% & 1.77 (1.12, 2.79) \\ 12007 & 22 & 30 & 12 & 30 & 1.2\% & 1.83 (1.12, 2.99) \\ 12007 & 22 & 30 & 12 & 30 & 1.2\% & 1.83 (1.12, 2.99) \\ 12010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (1.04, 1.44) \\ 12010 & 47 & 49 & 67 & 76 & 5.3\% & 1.09 (1.98, 1.20) \\ 12001 & 47 & 49 & 67 & 76 & 5.2\% & 1.09 (1.98, 1.20) \\ 12001 & 47 & 49 & 67 & 76 & 5.2\% & 1.09 (1.98, 1.20) \\ 12001 & 47 & 49 & 67 & 76 & 5.2\% & 1.09 (1.98, 1.20) \\ 12001 & 47 & 49 & 67 & 76 & 5.2\% & 1.08 (1.97, 1.44) \\ 12010 & 47 & 49 & 67 & 76 & 5.2\% & 1.08 (1.97, 1.49) \\ 12016 & 37 & 45 & 27 & 45 & 2.7\% & 1.57 (1.04, 1.80) \\ 12015 & 17 & 20 & 11 & 20 & 1.1\% & 1.55 (1.00, 2.39) \\ 112015 & 17 & 20 & 11 & 20 & 1.1\% & 1.55 (1.00, 2.39) \\ 112016 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 (1.04, 1.63) \\ 12016 & 57 & 60 & 47 & 60 & 42\% & 1.21 (1.05, 1.40) \\ 12016 & 57 & 60 & 47 & 60 & 42\% & 1.21 (1.05, 1.40) \\ 12016 & 57 & 60 & 47 & 60 & 47\% & 6.27\% & 1.37 (1.04, 1.80) \\ 12016 & 57 & 60 & 47 & 60 & 47\% & 6.27\% & 1.37 (1.04, 1.80) \\ 12016 & 37 & 45 & 27 & 45 & 2.7\% & 1.33 (1.01, 1.40) \\ 12016 & 57 & 60 & 47 & 60 & 47\% & 1.23 (1.05, 1.44) \\ 12016 & 37 & 45 & 27 & 45 & 2.7\% & 1.33 (1.01, 1.40) \\ 12016 & 37 & 45 & 23 & 30 & 1.8\% & 1.38 (1.00, 1.40) \\ 12016 & 37 & 45 & 37 & 50 & 3.8\% & 1.22 (1.02, 1.48) \\ 12019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 (1.02, 1.48) \\ 12019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 (1.02, 1.48) \\ 12019 & 50 & 56 & 60 & 55 & 60 & 1.2\% & 1.28 (1.00, 1.53) \\ 12020 & 23 & 32 & 24 & 18 & 24 & 1.8\% & 1.28 (1.00, 1.53) \\ 12020 & 24 & 45 & 56 & 37 & 50 & 3.8\% & 1.22 (1.01, 1.73) \\ 1203 & 50 & 20 & 13 & 33 & 32 & 24\% & 1.38 (1.00, 1.63) \\ 1204 & 1203 & 30 & 32 & 33 & 2.2\% & 1.55 (1.12, 2.14) \\ 12016 & 12016 & 44 & 47 & 39 & 47 & 7\% & 1.28 (1.00, 1.53) \\ 1204 & 12016 & 44 & 47 & 39 & 47 & 7\% & 1.28 (1.00, 1.53) \\ 12020 & 37 & 40 & 28 & 40 & 5.7\% & 1.22 (1.01, 1.53) \\ 12020 & 37 & 40 & 28 & 40 & 5.7\% & 1.22 (1.01, 1.54) \\ 12016 & 14 & 15 & 71 & 57 & 1.4\% & 1.28 (1.01, 1.53) \\ 120201 & 222 & 113 & 124 & 49 & 66 & 13.0\% & 1.24 (1.07, 1.31) \\ 1204 $	l.8.1 ≤3mth							
$ \begin{array}{c} \text{is 2005} \\ \text{is 2007} \\ \text{arg 2007} \\ \text{dr} $	.i 2004	23	30	13	30	1.3%	1.77 [1.12, 2.79]	
$ \begin{array}{c} 12007 & 22 & 30 & 12 & 10 & 10 & 11 & 16 & 10 & 11 & 10 & 10$	_iu 2005	32	38	22	38	2.2%	1.45 [1.07, 1.97]	
	_i 2007	22	30	12	30	1.2%	1.83 [1.12, 2.99]	
liang 2009 45 47 38 46 3.7% 1.22 [1.04, 1.44] 12010 47 49 67 76 5.3% 1.09 [0.98, 1.20] 131 2010 47 49 67 76 5.3% 1.09 [0.98, 1.20] 131 2010 47 49 67 76 5.3% 1.09 [0.98, 1.20] 131 2015 12 15 12 15 1.2% 1.08 [0.76, 1.49] 132 015 37 45 27 45 2.7% 1.37 [1.04, 1.80] 132 015 23 30 19 30 1.9% 1.21 [0.86, 1.69] 132 015 23 30 19 30 1.9% 1.21 [0.86, 1.69] 132 0216 28 31 24 30 2.5% 1.13 [0.91, 1.40] 132 0216 37 45 27 45 2.7% 1.37 [1.04, 1.80] 132 016 57 60 47 60 4.8% 1.21 [1.05, 1.40] 132 016 57 60 47 60 4.8% 1.21 [1.05, 1.40] 132 016 57 60 47 60 4.8% 1.21 [1.05, 1.40] 132 016 57 60 47 60 4.8% 1.21 [1.05, 1.40] 132 016 57 60 47 60 4.8% 1.21 [1.05, 1.40] 132 016 57 60 47 60 4.8% 1.21 [1.05, 1.40] 132 016 57 60 47 60 4.8% 1.22 [1.02, 1.46] 132 016 57 60 47 60 4.8% 1.22 [1.02, 1.46] 132 016 57 60 47 60 4.8% 1.22 [1.02, 1.46] 142 017 25 30 18 30 43 3.1% 1.30 [1.04, 1.62] 142 017 48 50 39 50 4.0% 1.23 [1.05, 1.44] 142 010 50 56 40 55 4.1% 1.23 [1.05, 1.44] 142 010 30 20 20 30 43 30 43 3.1% 1.30 [1.04, 1.62] 142 020 39 43 30 43 3.1% 1.30 [1.04, 1.62] 142 020 39 43 30 43 3.1% 1.30 [1.04, 1.62] 142 020 39 43 30 43 3.1% 1.30 [1.04, 1.62] 142 020 39 44 27 44 2.7% 1.42 [1.01, 1.61] 142 020 39 44 30 44% 1.22 [1.01, 1.61] 142 020 39 44 30 44% 1.22 [1.01, 1.61] 142 020 39 44 27 44 2.7% 1.42 [1.01, 1.61] 142 020 39 44 27 44 2.7% 1.42 [1.01, 1.61] 142 020 39 44 42 7 44 2.7% 1.42 [1.01, 1.61] 142 020 39 44 42 7 44 2.7% 1.42 [1.01, 1.61] 142 020 123 44 58 28 52 65% 3.10 [1.61, 61] 142 020 136 44 65 7 95% 1.06 [0.61, 33] 150 100 444 47 9 39 47 7.9% 1.25 [1.20, 1.30] 144 122 1.01 1.147] 150 44 14 7 39 47 7.9% 1.35 [1.00, 1.61] 150 210 44 47 7 39 47 7.9% 1.35 [1.00, 1.61] 144 112 1.87] 144 0.201 57 0.7 46 64 40 55 7 99% 1.06 [0.61, 50] 150 210 44 47 7 39 47 7.9% 1.35 [1.01, 1.61] 150 210 44 47 7 39 47 7.9% 1.35 [1.01, 1.61] 150 210 44 47 7 39 47 7.9% 1.35 [1.01, 1.61] 150 201 50 57 07 466 44 55 7.99% 1.35 [1.00, 1.58] 150 201 77 38 39 31 40 6.2% 1.35 [1.01, 1.51] 150 201 77 38 39 31 40 6.2% 1.35	rang 2007	47	49	67	76	5.3%	1.09 [0.98, 1.20]	-
$ \begin{array}{c} 12010 & 24 & 31 & 19 & 30 & 2.0\% & 1.22 (0.88, 1.70) \\ 112010 & 47 & 49 & 67 & 75 & 5.3\% & 1.14 (0.88, 1.49) \\ 408g 2014 & 13 & 15 & 12 & 15 & 1.2\% & 108 (0.85, 1.37) \\ 12015 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 (10.4, 1.60) \\ 112015 & 17 & 20 & 11 & 20 & 1.1\% & 1.55 (10.0, 2.39) \\ 112015 & 17 & 20 & 11 & 20 & 1.1\% & 1.55 (10.0, 2.39) \\ 112016 & 28 & 31 & 24 & 30 & 44 & 3.1\% & 1.30 (10.4, 1.63) \\ 102016 & 28 & 31 & 24 & 30 & 2.5\% & 1.18 (0.83, 1.51) \\ 12016 & 57 & 60 & 47 & 60 & 42.8\% & 1.21 (10.5, 1.40) \\ 102016 & 57 & 45 & 27 & 45 & 2.7\% & 1.37 (10.4, 1.80) \\ 112016 & 57 & 45 & 39 & 50 & 4.0\% & 1.39 (10.4, 1.62) \\ 12016 & 57 & 45 & 39 & 50 & 4.0\% & 1.39 (10.4, 1.62) \\ 120a0 & 516 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 (10.4, 1.80) \\ 120a0 & 101 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 (10.4, 1.80) \\ 120a0 & 101 & 37 & 45 & 32 & 43 & 2.4\% & 1.39 (10.0, 1.64) \\ 120a0 & 101 & 37 & 45 & 32 & 45 & 2.7\% & 1.37 (10.4, 1.80) \\ 120a0 & 101 & 30 & 30 & 2.3 & 30 & 2.4\% & 1.39 (10.0, 1.64) \\ 12019 & 37 & 40 & 32 & 40 & 3.3\% & 1.30 (10.4, 1.52) \\ 12019 & 37 & 40 & 32 & 40 & 3.3\% & 1.16 (10.0, 7.13) \\ 12020 & 50 & 54 & 41 & 53 & 4.2\% & 1.20 (10.2, 1.46) \\ 1a0 2019 & 30 & 30 & 2.3 & 30 & 2.4\% & 1.30 (10.4, 1.52) \\ 1a1 2020 & 50 & 54 & 41 & 53 & 4.2\% & 1.20 (10.2, 1.46) \\ 1a0 2019 & 37 & 40 & 32 & 40 & 3.4\% & 1.31 (10.7, 1.60) \\ 7aag 2022 & 44 & 65 & 37 & 59\% & 1.55 (1.12, 2.14) \\ 7aag 2022 & 44 & 50 & 37 & 50 & 3.8\% & 1.22 (1.0, 1.16) \\ 7aag 2021 & 34 & 35 & 26 & 35 & 2.6\% & 1.32 (1.00, 1.63) \\ 7aag 2022 & 44 & 50 & 34 & 50 & 11.2\% & 1.28 (1.00, 1.63) \\ 7aag 2021 & 43 & 50 & 21 & 30 & 4.1\% & 1.28 (1.00, 1.63) \\ 7aag 2021 & 44 & 50 & 31 & 50 & 7.1\% & 1.44 (1.02, 1.47) \\ 7aag 2021 & 44 & 50 & 31 & 50 & 7.1\% & 1.44 (1.02, 1.47) \\ 7aag 2021 & 44 & 50 & 31 & 50 & 7.1\% & 1.44 (1.02, 1.47) \\ 7aag 2021 & 44 & 46 & 38 & 46 & 3.9\% & 1.2\% & 1.25 (1.06, 1.63) \\ 7aag 2013 & 65 & 82 & 20 & 39 & 5.5\% & 1.55 (1.12, 1.49) \\ 7aag 2016 & 33 & 39 & 31 & 40 & 6.2\% & 1.26 (1.06, 1.50) \\ 7aag 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.26 (1.06, 1.50) \\ 7aag 20$	Jiang 2009	45	47	36	46	3.7%	1.22 [1.04, 1.44]	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	_i 2010	24	31	19	30	2.0%	1.22 [0.88, 1.70]	
Jang 2010 26 31 22 30 2.3% 1.14 (0.88, 1.49) deng 2014 13 15 12 12% 10.80 (0.79, 1.49) deng 2014 14 15 13 15 1.3% 1.08 (0.85, 1.37) J2015 37 45 27 45 2.7% 1.371 (0.4, 1.60) J1 2015 17 20 11 20 11% 1.551 (0.0, 2.39) Wang 2016 28 31 24 30 2.5% 1.12 (0.86, 1.69) Wang 2016 34 41 28 40 2.9% 1.18 (0.33, 1.51) J2016 57 60 47 60 48% 1.18 (0.33, 1.51) J2016 57 60 47 60 48% 1.30 (1.4, 1.63) Dana 2016 37 45 27 45 2.7% 1.371 (1.4, 1.60) Dana 2016 37 45 27 45 2.7% 1.371 (1.4, 1.60) Dana 2016 37 45 27 45 2.7% 1.310 (1.4, 1.62) Dana 2017 25 30 18 30 1.6% 1.391 (10.0, 1.84) Dana 2018 37 45 27 45 2.7% 1.331 (1.5, 1.40) Dana 2018 37 45 27 45 2.7% 1.331 (1.5, 1.40) Dana 2018 37 45 28 24% 1.331 (1.5, 1.40) Dana 2017 46 50 39 50 4.0% 1.331 (1.5, 1.40) Dana 2018 37 40 32 40 3.3% 1.16 (1.97, 1.38) Dana 2018 45 49 37 49 3.6% 1.22 (1.02, 1.46) Dana 2018 45 49 37 49 3.6% 1.22 (1.02, 1.46) Dana 2018 45 49 37 40 32 24% 1.331 (1.6, 1.59) Dana 2018 37 40 32 40 3.3% 1.16 (1.97, 1.38) Dana 2018 45 49 33 0 4.3 3.1% 1.30 (1.06, 1.59) Dana 2018 37 40 32 24% 1.34 (2.10, 1.2, 1.46) Dana 2019 30 32 33 0 2.4% 1.32 (1.00, 1.73) Dana 203 39 43 30 43 3.1% 1.30 (1.06, 1.59) Dana 2020 39 43 30 43 3.1% 1.20 (1.02, 1.41) Dana 2020 39 43 30 43 3.1% 1.20 (1.02, 1.41) Dana 2020 39 44 27 44 2.7% 1.42 (1.12, 1.87) Dana 2020 24 5 50 37 50 3.8% 1.22 (1.01, 1.47) Dana 2020 24 45 50 37 50 3.8% 1.22 (1.01, 1.47) Dana 2020 24 45 50 37 50 3.8% 1.22 (1.01, 1.47) Dana 2020 24 45 50 37 50 3.8% 1.22 (1.01, 1.47) Dana 2020 24 45 50 37 50 3.8% 1.22 (1.01, 1.47) Dana 2020 24 45 50 37 50 3.8% 1.22 (1.02, 1.30] Dana 2020 24 55 30 21 30 4.5% 1.25 (1.2, 1.30] Dana 2020 24 55 30 21 30 4.5% 1.25 (1.2, 1.37) Dana 2020 37 40 28 40 57% 1.32 (1.01, 1.73) Dana 2020 37 40 28 40 57% 1.32 (1.01, 1.73) Dana 2020 37 40 28 40 57% 1.32 (1.01, 1.73) Dana 2020 37 40 28 40 57% 1.32 (1.01, 1.73) Dana 2020 37 40 28 40 57% 1.28 (1.00, 1.58) Dana 2020 37 40 28 40 57% 1.32 (1.00, 1.58) Dana 2020 37 40 28 40 57% 1.32 (1.00, 1.58) Dana 2020 37 40 28 40 57% 1	_i1 2010	47	49	67	76	5.3%	1.09 [0.98, 1.20]	
$ \begin{aligned} & \text{deng 2014} & 13 & 15 & 12 & 15 & 12\% & 1.08 [0.79, 1.49] \\ & \text{drag 2014} & 14 & 15 & 13 & 15 & 13\% & 108 [0.55, 137] \\ & \text{J2015} & 37 & 45 & 27 & 45 & 27\% & 1.37 [10.4, 1.80] \\ & \text{J2015} & 17 & 20 & 11 & 20 & 11\% & 155 [10.2, 2.99] \\ & \text{Jung 2016} & 39 & 44 & 30 & 44 & 31 & 44 & 30 & 2.5\% & 1.30 [0.14, 1.63] \\ & \text{Jung 2016} & 34 & 41 & 28 & 40 & 2.5\% & 1.13 [0.01, 1.40] \\ & \text{Jaco 2016} & 37 & 45 & 27 & 45 & 2.7\% & 1.37 [10.4, 1.80] \\ & \text{Jaco 2016} & 37 & 45 & 2.7 & 45 & 2.7\% & 1.37 [10.4, 1.80] \\ & \text{Jaco 2016} & 37 & 45 & 2.7 & 45 & 2.7\% & 1.39 [10.4, 1.62] \\ & \text{Jaco 2016} & 37 & 45 & 2.7 & 45 & 2.7\% & 1.39 [10.4, 1.62] \\ & \text{Jaco 2016} & 37 & 45 & 2.7 & 45 & 2.7\% & 1.39 [10.4, 1.62] \\ & \text{Jaco 2016} & 37 & 45 & 39 & 50 & 40\% & 1.28 [10.0, 1.64] \\ & \text{Jaco 2017} & 25 & 30 & 18 & 30 & 18\% & 1.39 [10.0, 1.64] \\ & \text{Jaco 2018} & 45 & 49 & 37 & 49 & 3.8\% & 1.28 [10.0, 1.64] \\ & \text{Jaco 2019} & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [10.2, 1.46] \\ & \text{Jaco 2019} & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [10.2, 1.46] \\ & \text{Jaco 2019} & 50 & 56 & 40 & 33 & 3.1\% & 1.30 [10.4, 1.52] \\ & \text{Jaco 2019} & 30 & 30 & 2.2 & 33 & 2.2\% & 3.12 [10.0, 1.73] \\ & \text{Jaco 2019} & 30 & 30 & 2.3 & 30 & 2.4\% & 1.30 [10.4, 1.52] \\ & \text{Jaco 2019} & 30 & 30 & 2.3 & 32 & 2.5\% & 1.32 [10.0, 1.73] \\ & \text{Jaco 2019} & 33 & 32 & 63 & 55 & 6.1\% & 1.28 [1.00, 1.63] \\ & \text{Jaco 2019} & 33 & 32 & 63 & 55 & 6.1\% & 1.28 [1.00, 1.63] \\ & \text{Jaco 2013} & 40 & 50 & 35 & 50 & 7.1\% & 1.14 [0.91, 1.44] \\ & \text{Jaco 202} & 44 & 46 & 38 & 46 & 38 & 9\% & 1.16 [10.0, 1.34] \\ & \text{Jaco 2013} & 40 & 50 & 35 & 50 & 7.1\% & 1.14 [1.91, 1.44] \\ & \text{Jaco 2015} & 43 & 45 & 59 & 9\% & 1.25 [1.12, 2.14] \\ & \text{Jaco 2016} & 33 & 39 & 31 & 40 & 6.2\% & 1.25 [1.00, 1.63] \\ & \text{Jaco 2016} & 33 & 93 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ & \text{Jaco 2016} & 33 & 93 & 31 & 40 & 6.2\% & 1.28 [10.0, 1.58] \\ & \text{Jaco 2017} & 38 & 39 & 31 & 40 & 6.2\% & 1.28 [1.06, 1.50] \\ & \text{Jaco 2016} & 44 & 44 & 73 & 94 & 7.9\% & 1.13 [0.97, 1.26] \\ & \text{Jaco 2016} & 44 & 44 & 73 & 94 & 7.9\% & 1.13 [0.97, 1$	iang 2010	26	31	22	30	2.3%	1.14 [0.88, 1.49]	
rang 2014       14       15       13       15       13%       1.08 [0.85, 1.37]         11 2015       17       20       11       20       11%       1.57[1.04, 1.60]         11 2015       17       20       11       20       11%       1.57[1.04, 1.60]         Wang 2016       29       44       30       44       31%       1.20[1.04, 1.63]         Wang 2016       28       31       24       30       2.5%       1.18[0.93, 1.61]         12016       57       60       47       60       48%       1.21[1.05, 1.40]         Dana 2017       25       30       18       30       1.6%       1.39[1.04, 1.80]         Dhang 2017       25       30       18       30       1.6%       1.33[1.01, 1.76]         Dhang 2017       25       30       18       31       1.30[1.06, 1.59]       1.6%         Liz 2018       35       4.0       3.3%       1.22[1.02, 1.46]       1.6%       1.22[1.02, 1.46]         Liz 2018       30       4.3       30       4.3       3.10[1.06, 1.59]       1.6%       1.22[1.02, 1.46]       1.4%         Liz 2010       2.3       2.4%       1.32[1.01, 1.47]       1.4%	Meng 2014	13	15	12	15	1.2%	1.08 [0.79, 1.49]	
$ \begin{array}{c} j2015 & 37 & 45 & 27 & 45 & 27\% & 1.37 [1.04, 1.80] \\ j12015 & 123 & 30 & 19 & 30 & 1.9\% & 1.21 [0.86, 1.69] \\ wang 2016 & 38 & 44 & 30 & 44 & 3.14\% & 1.30 [1.04, 1.83] \\ wang 2016 & 28 & 31 & 24 & 30 & 2.5\% & 1.30 [0.1, 1.40] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 [1.05, 1.40] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 [1.05, 1.40] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.30 [1.04, 1.80] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.30 [1.04, 1.80] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.30 [1.04, 1.80] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.33 [1.00, 1.94] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.33 [1.00, 1.94] \\ zabcol6 & 57 & 60 & 47 & 60 & 4.8\% & 1.33 [1.00, 1.94] \\ zabcol6 & 45 & 49 & 37 & 49 & 3.8\% & 1.38 [1.00, 1.94] \\ zabcol7 & 48 & 50 & 39 & 60 & 4.0\% & 1.22 [1.02, 1.46] \\ zabcol7 & 48 & 50 & 39 & 50 & 4.0\% & 1.22 [1.02, 1.46] \\ zabcol7 & 48 & 50 & 39 & 50 & 4.0\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 50 & 39 & 50 & 4.0\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 33 & 44 & 33 & 3.1\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 40 & 33 & 3.1\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 40 & 33 & 40 & 3.4\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 40 & 33 & 40 & 3.4\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 40 & 33 & 40 & 3.4\% & 1.30 [1.04, 1.62] \\ zabcol7 & 48 & 40 & 33 & 40 & 3.4\% & 1.22 [1.00, 1.73] \\ zabcol7 & 48 & 40 & 33 & 40 & 3.4\% & 1.21 [1.07, 1.60] \\ zabcol7 & 48 & 40 & 33 & 46 & 3.9\% & 1.26 [1.06, 1.30] \\ zabcol7 & 48 & 40 & 50 & 35 & 50 & 7.1\% & 1.44 [1.07, 1.60] \\ zabcol7 & 48 & 40 & 50 & 35 & 50 & 7.1\% & 1.44 [1.07, 1.61] \\ zabcol7 & 48 & 40 & 57 & 9.5\% & 1.55 [1.12, 2.14] \\ zabcol7 & 40 & 50 & 35 & 50 & 7.1\% & 1.26 [1.06, 1.50] \\ zabcol7 & 44 & 47 & 39 & 45 & 7.9\% & 1.26 [1.06, 1.50] \\ zabcol7 & 44 & 47 & 39 & 45 & 7.9\% & 1.26 [1.06, 1.50] \\ zabcol7 & 44 & 47 & 39 & 31 & 40 & 6.2\% & 1.28 [1.06, 1.50] \\ zabcol7 & 44 & 47 & 39 & 31 & 40 & 6.2\% & 1.28 [1.06, 1.50] \\ zabcol7 & 44 & 47 & 39 & 34 & 7.9\% & 1.21 [1.00, 1.7, 31] \\ zabcol7 & 44 & 47 & 39 & 39 & 51 & 40 & 6.2\% & 1.28 [1.06, 1.50] \\ zabcol7 & 44 & 47 &$	Yang 2014	14	15	13	15	1.3%	1.08 [0.85, 1.37]	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	i 2015	37	45	27	45	2.7%	1.37 [1.04, 1.80]	
$ \begin{array}{c} 12 016 & 23 & 30 & 19 & 30 & 19\% & 121 [0.65, 1.69] \\ 12 016 & 39 & 44 & 31\% & 130 [104, 183] \\ 12 016 & 28 & 31 & 24 & 30 & 2.5\% & 1.30 [104, 183] \\ 12 016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 [1.05, 1.40] \\ 12 016 & 57 & 60 & 47 & 60 & 4.8\% & 1.30 [104, 1.62] \\ 12 016 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 [1.04, 1.80] \\ 12 016 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 [1.04, 1.62] \\ 12 012 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.05, 1.44] \\ 12 013 & 46 & 93 & 74 & 93 & 3.8\% & 1.22 [1.02, 1.46] \\ 12 019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.05, 1.44] \\ 12 019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.05, 1.44] \\ 12 019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.05, 1.44] \\ 12 019 & 37 & 40 & 32 & 40 & 3.3\% & 1.6 [0.97, 1.38] \\ 12 019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.06, 1.59] \\ 12 020 & 30 & 30 & 23 & 30 & 2.4\% & 1.30 [1.04, 1.62] \\ 11 2 020 & 39 & 43 & 30 & 43 & 3.1\% & 1.30 [1.04, 1.62] \\ 11 2 020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.73] \\ 12 020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.73] \\ 12 020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 12 020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 12 020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 12 019 & 30 & 30 & 22 & 30 & 5.5\% & 1.55 [1.12, 2.14] \\ 4a 2020 & 28 & 44 & 27 & 44 & 2.7\% & 1.44 [1.12, 1.87] \\ 50 0201 & 23 & 24 & 18 & 24 & 7\% & 1.48 [1.00, 1.63] \\ 12 0210 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 12 0210 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.28 [1.00, 1.63] \\ 4a 2020 & 23 & 24 & 47 & 44 & 2.7\% & 1.42 [1.17, 1.31] \\ \hline \back torowerall effect Z = 11.90 (P < 0.00001) \\ \hline \ \back torowerall effect Z = 11.90 (P < 0.00001) \\ \hline \ \back torowerall effect Z = 17.78 (P < 0.00001) \\ \hline \ \back torowerall effect Z = 17.78 (P < 0.00001) \\ \hline \ \ \back torowerall e$	i1 2015	17	20	11	20	1.1%	1.55 [1.00, 2.39]	
$ \begin{array}{c} \mbox{Wang} 2016 & 39 & 44 & 30 & 44 & 3, 1% & 1.00 \ 1.04, 1.63 \ 104, 1.63 \ 104, 1.63 \ 104, 1.63 \ 104, 1.63 \ 104, 1.63 \ 104, 1.63 \ 102016 & 57 & 60 & 47 & 60 & 4.8\% & 1.21 \ 1.05, 1.40 \ 104, 1.62 \ 106, 1.57 & 60 & 47 & 60 & 4.8\% & 1.21 \ 1.05, 1.40 \ 104, 1.62 \ 106, 1.57 & 60 & 47 & 60 & 4.8\% & 1.21 \ 1.05, 1.40 \ 104, 1.62 \ 106, 1.50 \ 104, 1.62 \ 106, 1.50 \ 104, 1.62 \ 106, 1.50 \ 104, 1.62 \ 106, 1.50 \ 104, 1.62 \ 106, 1.59 \ 106, 1.50 \ 106, 1.$	iu 2015	23	30	19	30	1.9%	1 21 [0 86, 1 69]	
$\begin{array}{c} u_{2016} & 28 & 31 & 24 & 30 & 2.5\% & 1.13 [0.31, 1.40] \\ 3u_{2016} & 34 & 41 & 28 & 40 & 2.2\% & 1.18 [0.33, 1.51] \\ 1.2016 & 57 & 60 & 47 & 60 & 4.5\% & 1.21 [1.05, 1.40] \\ 3in 2016 & 37 & 45 & 27 & 45 & 2.7\% & 1.37 [1.04, 1.82] \\ 2hang 2017 & 35 & 88 & 27 & 38 & 2.7\% & 1.39 [1.04, 1.62] \\ 2hao 2017 & 25 & 30 & 18 & 30 & 1.8\% & 1.29 [1.00, 1.94] \\ 7hao 2018 & 32 & 38 & 24 & 38 & 2.4\% & 1.33 [1.01, 1.76] \\ 1iao 2019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.02, 1.46] \\ 1iao 2019 & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.02, 1.46] \\ 1iao 2019 & 30 & 30 & 23 & 30 & 2.4\% & 1.30 [1.06, 1.59] \\ 1iao 2019 & 30 & 30 & 23 & 30 & 2.4\% & 1.30 [1.06, 1.62] \\ 1ui 2020 & 39 & 43 & 30 & 43 & 3.1\% & 1.30 [1.04, 1.62] \\ 1ui 2020 & 50 & 54 & 41 & 53 & 4.2\% & 1.20 [1.02, 1.41] \\ 4a 2020 & 23 & 24 & 18 & 24 & 1.8\% & 1.28 [1.00, 1.73] \\ rug ang 2021 & 34 & 35 & 26 & 55 & 2.6\% & 1.31 [1.07, 1.60] \\ rang 2022 & 44 & 65 & 35 & 2.6\% & 1.31 [1.07, 1.60] \\ rang 2022 & 44 & 66 & 35 & 9.5\% & 1.155 [1.12, 2.14] \\ rang 2015 & 28 & 30 & 22 & 30 & 4.5\% & 1.22 [1.01, 1.47] \\ rang 2016 & 33 & 39 & 24 & 39 & 5.7\% & 1.44 [1.12, 1.87] \\ rang 2016 & 33 & 39 & 25 & 39 & 5.7\% & 1.10 [0.71, 1.60] \\ rang 2016 & 25 & 30 & 22 & 30 & 4.5\% & 1.27 [1.01, 1.41] \\ rang 2016 & 23 & 30 & 22 & 30 & 4.5\% & 1.25 [1.12, 2.14] \\ rang 2016 & 23 & 30 & 22 & 30 & 4.5\% & 1.25 [1.12, 1.41] \\ rang 2016 & 23 & 39 & 31 & 40 & 6.2\% & 1.26 [1.66, 1.49] \\ rang 2016 & 23 & 39 & 31 & 40 & 6.2\% & 1.26 [1.66, 1.65] \\ rang 2016 & 25 & 30 & 21 & 30 & 4.5\% & 1.25 [1.01, 1.73] \\ rang 2016 & 23 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ rang 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ rang 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ rang 2016 & 27 & 7.0 & 20 & 30 & 4.1\% & 1.35 [1.02, 1.73] \\ rang 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ rang 2016 & 27 & 7.0 & 28 & 40 & 5.7\% & 1.32 [1.06, 1.50] \\ rang 2016 & 27 & 7.0 & 28 & 40 & 5.7\% & 1.32 [1.06, 1.50] \\ rang 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.66, 1.50] \\ rang 2017 & 38 & 39 & 31 & 40 & 6.2\% & 1.25 $	Nang 2016	39	44	30	44	3.1%	1 30 [1 04 1 63]	
$ \begin{array}{c} \text{Sub Ot} \\ \text{Sub Califies} & \begin{array}{c} 2d & 41 & 28 & 40 & 2.9\% \\ 11.18 [0.03, 1.51] \\ 12016 & 57 & 60 & 47 & 60 & 48\% \\ 121 [1.05, 1.40] \\ \text{Zhang 2017} & 35 & 38 & 27 & 38 & 2.7\% \\ 130 [1.04, 1.80] \\ \text{Zhang 2017} & 35 & 38 & 27 & 38 & 2.7\% \\ 130 [1.04, 1.80] \\ \text{Zhen 2017} & 48 & 50 & 39 & 50 & 4.0\% \\ 123 [1.05, 1.44] \\ \text{Zhen 2017} & 48 & 50 & 39 & 50 & 4.0\% \\ 123 [1.05, 1.44] \\ \text{Zhang 2018} & 45 & 49 & 37 & 49 & 38\% \\ 122 [1.02, 1.46] \\ \text{Iia 2019} & 37 & 40 & 32 & 40 & 3.3\% \\ 1.16 [0.97, 1.38] \\ 1.2019 & 37 & 40 & 32 & 40 & 3.3\% \\ 1.2020 & 39 & 43 & 30 & 43 & 3.3\% \\ 1.30 [1.04, 1.62] \\ \text{Jun 2019} & 30 & 23 & 30 & 43 & 3.3\% \\ 1.30 [1.04, 1.62] \\ \text{Jun 2020} & 50 & 54 & 41 & 53 & 4.2\% \\ 1.20 [1.02, 1.41] \\ \text{Jun 2020} & 50 & 54 & 41 & 53 & 4.2\% \\ 1.20 [1.02, 1.41] \\ \text{Jun 2020} & 50 & 54 & 41 & 53 & 4.2\% \\ 1.20 [1.00, 1.63] \\ \text{Vag 2020} & 29 & 33 & 22 & 33 & 2.2\% \\ 1.32 [1.00, 1.63] \\ \text{Vag 2021} & 34 & 35 & 26 & 35 & 2.6\% \\ 1.35 [1.12, 2.14] \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.3\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.3\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.9\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.9\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.9\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.9\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.9\% \\ \text{Tang 2022} & 44 & 46 & 38 & 46 & 3.9\% \\ \text{Tang 2022} & 44 & 46 & 57 & 9.9\% \\ \text{Tang 2015} & 28 & 30 & 22 & 30 & 4.5\% \\ \text{Tang 2016} & 33 & 39 & 25 & 39 & 5.7\% \\ \text{Tang 2016} & 33 & 39 & 25 & 39 & 5.7\% \\ \text{Tang 2016} & 43 & 45 & 39 & 45 & 7.9\% \\ \text{Tang 2017} & 38 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2016} & 25 & 30 & 21 & 30 & 4.3\% \\ \text{Tang 2017} & 38 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2016} & 13 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2017} & 38 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2016} & 44 & 47 & 39 & 47 & 7.9\% \\ \text{Tang 2017} & 38 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2016} & 13 & 50 & 7\% \\ \text{Tang 2017} & 38 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2016} & 13 & 100 & 7.13] \\ \text{Tang 2017} & 38 & 39 & 31 & 40 & 6.2\% \\ \text{Tang 2016} & 13 & 100 & 7.13 \\ \text{Tang 2020} & 7 & 40 & 28 & 40 & 5.7\% \\ \text{Tang 2016} & 13 &$	/u 2016	28	31	24	30	2.5%		
$ \begin{array}{c} D_{22} D_{10} & D_{10}$	Sup 2016	34	41	28	40	2.0%		
$ \begin{array}{c} 2010 \\ 102016 \\ 102016 \\ 102016 \\ 102017 \\ 102 \\ 102017 \\ 102 \\ 102017 \\ 102 \\ 102017 \\ 102 \\ 102017 \\ 102 \\ 102017 \\ 102 \\ 102017 \\ 102 \\ 102 \\ 102017 \\ 102 \\ 102 \\ 102018 \\ 102$	i 2016	57	60	47	60	1.8%	1 21 [1 05 1 40]	
$ \begin{array}{c} \text{an } L \ \text{tr} \text{tr} \ \text{tr}$	Din 2016	37	46	47	46	9.70/	1 37 [1 04 1 90]	
$\begin{array}{c} triangle of the triangle of triangle of the triangle of triangle $	2010 Zhang 2017	37	45	27	40	2.1%	1.37 [1.04, 1.60]	
$ \begin{array}{c} Linu \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	Inally 2017	35	30	21	30	2.1%	1.30 [1.04, 1.02]	
Little 2017 48 50 39 50 40% 1.23 [1.45, 1.44] The 2018 32 38 24 38 2.44% 1.33 [1.01, 1.76] Thao 2019 50 56 40 55 41% 1.22 [1.02, 1.46] Li 2019 37 40 32 40 3.3% 1.16 [0.97, 1.38] Yuan 2019 30 30 23 30 2.4% 1.30 [1.06, 1.59] Li 2020 39 43 30 43 31% 1.30 [1.06, 1.59] Li 2020 39 43 30 43 31% 1.30 [1.06, 1.59] Li 2020 38 40 33 40 3.34% 1.15 [0.98, 1.35] Song 2020 29 33 22 33 2.2% 1.32 [1.00, 1.73] Yuan 2012 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2021 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2022 44 55 0 37 50 3.8% 1.22 [1.01, 1.47] Thang 2022 44 46 38 46 3.3% 1.155 [1.12, 2.14] Heterogeneity: Ch <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 11.69 (P < 0.00001) L8.2 > 3mth Zou 2015 28 30 22 30 4.5% 1.25 [1.12, 1.14] La 2016 33 9 31 40 6.2% 1.25 [1.10, 1.61] Thang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Thang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Thang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Thang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Thang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Thang 2016 33 9 31 40 6.2% 1.26 [1.06, 1.50] Thao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Thao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Thao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Thao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Thao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Thao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Thao 2016 25 30 21 30 4.3% 1.27 [1.15, 3.49] Jub 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Jub 2018 144 47 39 47 7.9% 1.22 [1.06, 1.65] Jua 2020 37 40 28 40 5.7% 1.32 [1.06, 1.50] Jua 2020 37 40 28 40 5.7% 1.32 [1.06, 1.50] Jua 2020 37 40 28 40 5.7% 1.32 [1.06, 1.50] Jua 2021 27 30 20 30 4.4% 1.20 [1.05, 1.43] Jub 2018 144 47 39 47 7.9% 1.13 [0.97, 1.31] Jub 2018 144 47 9 9 47 7.9% 1.13 [0.97, 1.31] Jub 2018 144 47 9 9 47 7.9% 1.13 [0.97, 1.31] Jub 2018 144 47 9 9 47 7.9% 1.22 [1.06, 1.65] Jua 2020 37 40 28 40 5.7% 1.32 [1.06, 1.65] Jua 2020 37 40 28 40 5.7% 1.32 [1.06, 1.65] Jub 2021 27 7 30 20 30 4.4% 1.10 [0.97, 1.28] Jub 2021 27 7 30 20 30 4.4% 1.10 [0.77, 1.15,	Liid0 2017	25	30	18	30	1.8%	1.39 [1.00, 1.94]	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Shen 2017	48	50	39	50	4.0%	1.23 [1.05, 1.44]	
The 2018 45 49 37 49 3.8% 1.22 [1.02, 1.46] 12019 50 56 40 55 4.1% 1.23 [1.02, 1.48] 12019 30 30 23 30 2.4% 1.30 [1.04, 1.62] 12020 39 43 30 43 3.1% 1.30 [1.04, 1.62] 1.0200 50 54 41 53 4.2% 1.20 [1.02, 1.41] 42020 38 40 33 40 3.4% 1.15 [0.98, 1.35] Song 2020 29 33 22 33 2.2% 1.32 [1.00, 1.63] Vang 2021 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2022 44 56 37 50 3.8% 1.22 [1.01, 1.47] Yang 2022 44 56 34 2.6% 1.31 [1.07, 1.60] Yang 2022 44 56 34 2.6% 1.31 [1.07, 1.60] Yang 2023 39 44 27 44 2.7% 1.44 [1.12, 1.87] Subtotal (95% CI) 1351 1398 100.9% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Ch <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2011 36 58 22 03 9.5.% 1.55 [1.12, 2.14] 1.2014 56 64 46 57 99% 1.08 [0.93, 1.27] 1.22 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] 2.2016 33 39 25 39 5.1% 1.32 [1.06, 1.49] 2.2016 33 39 25 39 5.5% 1.25 [1.06, 1.49] 2.2016 33 39 25 39 5.1% 1.22 [1.06, 1.49] 2.2016 33 39 25 39 5.1% 1.22 [1.06, 1.49] 2.2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 2.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 2.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] 3.40 2.40 2.40 2.40 2.40 2.40 2.40 2.40 2	Nu 2018	32	38	24	38	2.4%	1.33 [1.01, 1.76]	
$\begin{aligned} \text{Jac 2019} & 50 & 56 & 40 & 55 & 4.1\% & 1.23 [1.02, 1.48] \\ \text{Yuan 2019} & 30 & 30 & 23 & 30 & 2.4\% & 1.30 [1.06, 1.59] \\ \text{Jac 2020} & 39 & 43 & 30 & 43 & 3.1\% & 1.30 [1.04, 1.62] \\ \text{Jul 2020} & 50 & 54 & 41 & 53 & 4.2\% & 1.20 [1.02, 1.41] \\ \text{Vaa 2020} & 38 & 40 & 33 & 40 & 3.4\% & 1.15 [0.98, 1.35] \\ \text{Song 2020} & 29 & 33 & 22 & 33 & 2.2\% & 1.32 [1.00, 1.73] \\ \text{Yuan 2021} & 34 & 35 & 26 & 35 & 2.6\% & 1.31 [1.07, 1.60] \\ \text{frang 2022} & 44 & 46 & 38 & 46 & 3.9\% & 1.16 [1.00, 1.63] \\ \text{Yang 2023} & 39 & 44 & 27 & 44 & 2.7\% & 1.44 [1.12, 1.87] \\ \text{Subtotal (95\% CI)} & 1351 & 1398 & 100.0\% & 1.25 [1.20, 1.30] \\ \text{Fall cerves heal of the 2 0.00001} \\ \text{I.8.2 > 3mth} \\ \text{Zou 2013} & 65 & 82 & 20 & 39 & 5.5\% & 1.55 [1.12, 2.14] \\ \text{Fang 2015} & 69 & 80 & 55 & 80 & 11.2\% & 1.25 [1.06, 1.49] \\ \text{Yang 2015} & 28 & 30 & 22 & 30 & 4.5\% & 1.27 [1.01, 1.61] \\ \text{Jang 2015} & 28 & 30 & 22 & 30 & 4.5\% & 1.27 [1.00, 1.73] \\ \text{Yang 2015} & 43 & 45 & 39 & 45 & 7.9\% & 1.10 [0.97, 1.26] \\ \text{Jang 2015} & 43 & 45 & 39 & 45 & 7.9\% & 1.10 [0.97, 1.26] \\ \text{Jang 2015} & 43 & 45 & 39 & 45 & 7.9\% & 1.13 [1.00, 1.58] \\ \text{Jang 2016} & 33 & 39 & 21 & 30 & 4.3\% & 1.19 [0.90, 1.58] \\ \text{Jang 2016} & 33 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2016} & 33 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2017} & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2016} & 31 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2017} & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2016} & 37 & 40 & 28 & 40 & 5.7\% & 1.32 [1.06, 1.43] \\ \text{Jui 2021} & 27 & 30 & 20 & 30 & 4.1\% & 1.32 [1.06, 1.65] \\ \text{Jang 2016} & 37 & 40 & 28 & 40 & 5.7\% & 1.32 [1.06, 1.65] \\ \text{Jang 2017} & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2016} & 37 & 40 & 28 & 40 & 5.7\% & 1.32 [1.06, 1.65] \\ \text{Jang 2017} & 38 & 39 & 31 & 40 & 6.2\% & 1.26 [1.06, 1.50] \\ \text{Jang 2016} & 136, 2.6 & 14 (P = 0.48); P = 0\% \\ \text{Favours [conperimental] Favours [control]} \\ \text{Favours [conperimental] Favours [control]} \\ Favours [conperimental] Favours [control]$	Zhao 2018	45	49	37	49	3.8%	1.22 [1.02, 1.46]	
$ \begin{array}{c} 2019 & 37 & 40 & 32 & 40 & 3.3\% & 1.6 \\ (0, 57, 1.38] \\ (van 2019 & 30 & 30 & 32 & 30 & 43 & 3.1\% & 1.30 \\ (1.04, 1.62] \\ (1.0220 & 39 & 43 & 30 & 43 & 3.1\% & 1.30 \\ (1.02 & 1.02 & 1.02 & 1.02 \\ (1.02 & 1.02 & 1.03 & 40 & 3.3\% & 1.15 \\ (1.02 & 0.3 & 40 & 3.3 & 40 & 3.4\% & 1.15 \\ (1.02 & 0.3 & 44 & 33 & 40 & 3.4\% & 1.15 \\ (1.02 & 0.2 & 23 & 24 & 18 & 24 & 1.8\% & 1.28 \\ (1.00 & 1.03 & 1.05 & 1.39 & 1.00 & 1.63 \\ (1.02 & 0.2 & 23 & 24 & 18 & 24 & 1.8\% & 1.28 \\ (1.00 & 1.02 & 1.34 & 35 & 26 & 35 & 2.6\% & 1.31 \\ (1.07, 1.60 & 1.03 & 1.06 & 1.05 & 1.00 & 1.25 \\ (1.02 & 0.2 & 24 & 4 & 46 & 38 & 46 & 3.9\% & 1.16 \\ (1.01 & 0.134 & 1.06 & 1.00 & 1.25 \\ (1.02 & 0.2 & 39 & 44 & 27 & 44 & 2.7\% & 1.44 \\ (1.12, 1.87) \\ (1.02 & 0.20 & 39 & 44 & 27 & 44 & 2.7\% & 1.44 \\ (1.12, 1.87) \\ (1.02 & 0.20 & 39 & 44 & 27 & 44 & 2.7\% & 1.44 \\ (1.12, 1.87) \\ (1.02 & 0.13 & 1.398 & 100.0\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.55 \\ (1.12, 2.14) \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.55 \\ (1.12, 2.14) \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 65 & 82 & 20 & 39 & 5.5\% & 1.25 \\ (1.02 & 0.13 & 1.05 & 1.39 & 1.00 \\ (1.02 & 0.13 & 1.05 & 1.39 & 1.00 \\ (1.02 & 0.13 & 1.05 & 1.39 & 1.00 \\ (1.02 & 0.13 & 1.05 & 1.39 & 1.00 \\ (1.02 & 0.13 & 1.05 & 1.39 & 1.00 \\ (1.02 & 0.13 & 1.05 & 1.39 & 1.00 \\ (1.02 & 0.13 & 0.13 & 1.30 & 1.24 & 1.05 & 1.26 \\ (1.06 & 0.5) & 0.7 & 1.5 & 2 \\ (1.05 & 0.7 & 1.5 & 2 \\ (1.05 & 0.7 & 1.5 & 2 \\ (1.05 & 0.7 & 1.5 & 2 \\ (1.05 & 0.7 & 1.5 & 2 \\$	Jiao 2019	50	56	40	55	4.1%	1.23 [1.02, 1.48]	
$ \begin{array}{c} \mbox{func} 2019 & 30 & 30 & 23 & 30 & 2.4 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	_i 2019	37	40	32	40	3.3%	1.16 [0.97, 1.38]	
in 2020 39 43 30 43 3.1% 1.30 [1.04, 1.62] iu 2020 50 54 41 53 42% 1.20 [1.02, 1.41] Ma 2020 28 33 22 33 2.2% 1.32 [1.00, 1.73] Vi 2020 29 33 22 33 2.2% 1.32 [1.00, 1.73] Vi 2020 23 24 18 24 1.8% 1.28 [1.00, 1.63] Wang 2021 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Thenag 2022 44 46 38 46 3.9% 1.16 [1.00, 1.34] Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Thenag 2023 39 44 27 44 2.7% 1.44 [1.12, 1.87] Subtotal (9% Cl) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Chi <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Yang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Thenag 2016 25 30 2.1 30 4.3% 1.129 [1.01, 1.73] Tao 2016 25 30 2.1 30 4.3% 1.27 [1.01, 1.61] Thenag 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Total events 670 468 Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); P = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); P = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); P = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); P = 0% Test for overall	ruan 2019	30	30	23	30	2.4%	1.30 [1.06, 1.59]	
Liut 2020 50 54 41 53 42% 1.20 [1.02, 1.41] Wa 2020 38 40 33 40 3.4% 1.15 [0.98, 1.35] Song 2020 29 33 22 33 2.2% 1.32 [1.00, 1.63] Wang 2021 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Zhang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Zhang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Yang 2023 39 44 27 44 2.7% 1.44 [1.12, 1.87] Subtotal (95% CI) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Chi <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] In 2014 56 64 46 57 9.9% 1.08 [0.93, 1.27] Li 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Vang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 28 30 22 30 4.5% 1.28 [1.06, 1.49] Vang 2015 28 30 22 30 4.5% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Jao 2016 25 30 21 30 4.3% 1.19 [0.97, 1.31] Val8 44 47 39 47 7.9% 1.13 [0.97, 1.31] Val8 14 15 7 15 1.4% 2.00 [1.15, 3.49] Jao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2017 38 39 31 40 6.2% 1.28 [1.06, 1.50] Jao 2016 25 30 21 30 4.1% 1.35 [1.02, 1.79] Harrows [cheremontal] Favours [control] Favours [control] Favours [control] Favours [control]	_in 2020	39	43	30	43	3.1%	1.30 [1.04, 1.62]	
$ \begin{split} & 4a 2020 & 38 & 40 & 33 & 40 & 3.4^{\circ}_{\circ} & 1.15 [0.98, 1.35] \\ & Song 2020 & 29 & 33 & 22 & 33 & 2.2^{\circ}_{\circ} & 1.32 [1.00, 1.73] \\ & Vang 2021 & 34 & 35 & 26 & 35 & 2.6^{\circ}_{\circ} & 1.31 [1.07, 1.60] \\ & Yang 2022 & 45 & 50 & 37 & 50 & 3.8^{\circ}_{\circ} & 1.22 [1.01, 1.47] \\ & Zhang 2022 & 45 & 50 & 37 & 50 & 3.8^{\circ}_{\circ} & 1.22 [1.01, 1.47] \\ & Zhang 2022 & 44 & 46 & 38 & 46 & 3.9^{\circ}_{\circ} & 1.16 [1.00, 1.34] \\ & Yang 2022 & 44 & 46 & 38 & 46 & 3.9^{\circ}_{\circ} & 1.16 [1.00, 1.34] \\ & Yang 2022 & 44 & 46 & 38 & 46 & 3.9^{\circ}_{\circ} & 1.16 [1.00, 1.34] \\ & Yang 2022 & 44 & 46 & 38 & 46 & 3.9^{\circ}_{\circ} & 1.16 [1.00, 1.34] \\ & Yang 2022 & 44 & 46 & 38 & 46 & 3.9^{\circ}_{\circ} & 1.16 [1.00, 1.34] \\ & Yang 2023 & 39 & 44 & 27 & 44 & 2.7^{\circ}_{\circ} & 1.44 [1.12, 1.87] \\ & Subtotal (95^{\circ}_{\circ} Cl) & 1351 & 1398 & 100.8 \\ & Total events & 1208 & 1008 \\ & Test for overall effect: Z = 11.69 (P < 0.0001) \\ & 1.8.2 > 3mth \\ & Zou 2013 & 65 & 82 & 20 & 39 & 5.5^{\circ}_{\circ} & 1.55 [1.12, 2.14] \\ & = an 2014 & 40 & 50 & 35 & 50 & 7.1^{\circ}_{\circ} & 1.158 [0.93, 1.27] \\ & Zang 2015 & 28 & 30 & 22 & 30 & 4.5^{\circ}_{\circ} & 1.25 [1.06, 1.49] \\ & Wang 2015 & 28 & 30 & 22 & 30 & 4.5^{\circ}_{\circ} & 1.27 [1.01, 1.61] \\ & Zhang 2015 & 43 & 45 & 39 & 45 & 7.9^{\circ}_{\circ} & 1.10 [0.97, 1.26] \\ & Lao 2016 & 25 & 30 & 21 & 30 & 4.3^{\circ}_{\circ} & 1.9 [0.90, 1.58] \\ & Shao 2017 & 38 & 39 & 31 & 40 & 6.2^{\circ}_{\circ} & 1.26 [1.06, 1.50] \\ & Shao 2017 & 38 & 39 & 31 & 40 & 6.2^{\circ}_{\circ} & 1.26 [1.06, 1.50] \\ & Shao 2017 & 38 & 39 & 31 & 40 & 6.2^{\circ}_{\circ} & 1.22 [1.01, 1.61] \\ & Lan 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.05, 1.65] \\ & Lia 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.06, 1.65] \\ & Lia 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.05, 1.65] \\ & Lia 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.05, 1.65] \\ & Lia 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.05, 1.65] \\ & Lia 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.05, 1.65] \\ & Lia 2020 & 37 & 40 & 28 & 40 & 5.7^{\circ}_{\circ} & 1.32 [1.05, 1.65] \\ & Lia 2020 & 113 & 124 & 49 & 66 \\ & Stottota (95^{\circ}, Cl) & 7$	_iu1 2020	50	54	41	53	4.2%	1.20 [1.02, 1.41]	
Song 2020 29 33 22 33 2.2% 1.32 [1.00, 1.73] Yu 2020 23 24 18 24 1.8% 1.28 [1.00, 1.63] Wang 2021 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Zhang 2022 44 46 38 46 3.9% 1.16 [1.00, 1.34] Yang 2023 39 44 27 44 2.7% 1.44 [1.2, 1.87] Subtotal (95% CI) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Ch <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Jin 2014 56 64 46 57 9.9% 1.08 [0.93, 1.27] Liz 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2016 33 39 25 39 5.1% 1.32 [1.01, 1.73] Tao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Subtotal (95% CI) 754 648 100.0% 1.24 [1.07, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.48] Lian 2020 37 40 28 40 5.7% 1.32 [1.02, 1.79] Jin 2022 113 124 49 66 (3.0% 1.23 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Ch <sup>2</sup> = 3.162, df = 4 (P = 0.48); P = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Lian 2020 37 40 28 40 5.7% 1.32 [1.02, 1.79] Jin 2022 Li 13 124 49 66 (3.0% 1.23 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Ot al events 670 468 Heterogeneity: Ch <sup>2</sup> = 3.162, df = 14 (P = 0.48); P = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Lat for overall effect: Z = 7.78 (P < 0.00001)	Ma 2020	38	40	33	40	3.4%	1.15 [0.98, 1.35]	
Yu 2020 23 24 18 24 1.8% 1.28 [1.00, 1.63] Wang 2021 34 35 26 35 2.6% 1.31 [1.07, 1.60] Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Zhang 2022 44 46 38 46 3.9% 1.16 [1.00, 1.34] Yang 2023 39 44 27 44 2.7% 1.44 [1.12, 1.87] Subtotal [95% CI) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Ch <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Lia 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 43 45 39 45 7.9% 1.10 [0.97, 1.26] Lia 2016 33 39 25 39 5.1% 1.32 [1.01, 1.73] Tao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Chen 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Lia 2020 37 40 28 40 5.7% 1.32 [1.02, 1.73] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Ch <sup>2</sup> = 3.6.20 df = 4 (P = 0.48); P = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Lia 2020 17 40 28 40 5.7% 1.32 [1.06, 1.65] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Ch <sup>2</sup> = 3.6.20 df = 4 4P = 0.68; H = 0.07 Lia coverall effect: Z = 7.78 (P < 0.00001) Lia 2020 17 54 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Ch <sup>2</sup> = 3.6.2 df = 4 (P = 0.48); P = 0.6 Test for overall effect: Z = 7.78 (P < 0.00001)	Song 2020	29	33	22	33	2.2%	1.32 [1.00, 1.73]	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Yu 2020	23	24	18	24	1.8%	1.28 [1.00, 1.63]	
Yang 2022 45 50 37 50 3.8% 1.22 [1.01, 1.47] Thang 2022 44 46 38 46 3.9% 1.16 [1.00, 1.34] Yang 2023 39 44 27 44 2.7% 1.44 [1.12, 1.87] Subtotal (95% CI) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Chi <sup>2</sup> = 31.51, df = 34 (P = 0.59); P = 0% Test for overall effect: Z = 7.78 (P < 0.0001) I.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Fan 2014 40 50 35 50 7.1% 1.14 [0.91, 1.44] Jin 2014 56 64 44 57 9.9% 1.08 [0.93, 1.27] Xang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 43 45 39 45 7.9% 1.10 [0.97, 1.28] Nang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2016 33 39 25 39 5.1% 1.32 [1.01, 1.73] Tao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Chen 2018 44 47 39 47 7.9% 1.13 [0.7, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.46); I <sup>2</sup> = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Fast for overall effect: Z = 7.78 (P < 0.00001)	Wang 2021	34	35	26	35	2.6%	1.31 [1.07, 1.60]	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	rang 2022	45	50	37	50	3.8%	1.22 [1.01, 1.47]	
Yang 2023 39 44 27 44 2.7% 1.44 [1.12, 1.87] Subtotal (95% CI) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Ch <sup>2</sup> = 31.51, df = 34 (P = 0.59); l <sup>2</sup> = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Lia 2014 40 50 35 50 7.1% 1.48 [0.93, 1.27] Li2 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 43 45 39 45 7.9% 1.10 [0.97, 1.26] Lia 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.65] Chen 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.49] Lian 2020 37 40 28 40 5.7% 1.23 [1.06, 1.65] Chen 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Ch <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Test for overall effect: Z = 7.78 (P < 0.00001)	Zhang 2022	44	46	38	46	3.9%	1.16 [1.00, 1.34]	
Subtotal (95% CI) 1351 1398 100.0% 1.25 [1.20, 1.30] Total events 1208 1008 Heterogeneity: Chi <sup>2</sup> = 31.51, df = 34 (P = 0.59); l <sup>2</sup> = 0% Test for overall effect: Z = 11.69 (P < 0.00001) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Fan 2014 40 50 35 50 7.1% 1.14 [0.91, 1.44] Jin 2014 56 64 46 57 9.9% 1.08 [0.93, 1.27] Li2 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 43 45 39 45 7.9% 1.10 [0.97, 1.26] Liao 2016 33 39 25 39 5.1% 1.32 [1.01, 1.73] Tao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Chen 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.49] Lian 2020 37 40 28 40 5.7% 1.32 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.07, 1.31] Ai 2018 5670 468 Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Test for overall effect: Z = 7.78 (P < 0.00001)	rang 2023	39	44	27	44	2.7%	1.44 [1.12, 1.87]	
Total events 1208 1008 Heterogeneity: $Ch^2 = 31.51$ , $df = 34$ ( $P = 0.59$ ); $P = 0\%$ Test for overall effect: $Z = 11.69$ ( $P < 0.00001$ ) 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Fan 2014 40 50 35 50 7.1% 1.14 [0.91, 1.44] Jin 2014 56 64 46 57 9.9% 1.08 [0.93, 1.27] Li2 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 43 45 39 45 7.9% 1.10 [0.97, 1.26] Liao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Chen 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.49] Lian 2020 37 40 28 40 5.7% 1.32 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.23 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: $Ch^2 = 13.62$ , $df = 14$ ( $P = 0.48$ ); $P = 0\%$ Test for overall effect: $Z = 7.78$ ( $P < 0.00001$ )	Subtotal (95% CI)		1351		1398	100.0%	1.25 [1.20, 1.30]	♦
Heterogeneity: $Ch^2 = 31.51$ , $df = 34$ (P = 0.59); $l^2 = 0\%$ Test for overall effect: $Z = 11.69$ (P < 0.00001) <b>1.8.2 &gt; 3mth</b> Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Fan 2014 40 50 35 50 7.1% 1.14 [0.91, 1.44] Jin 2014 56 64 46 57 9.9% 1.08 [0.93, 1.27] Li2 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2015 43 45 39 45 7.9% 1.10 [0.97, 1.26] Liao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Chen 2018 44 47 39 47 7.9% 1.13 [0.97, 1.31] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.49] Lian 2020 37 40 28 40 5.7% 1.32 [1.06, 1.65] Qiu 2021 27 30 20 30 4.1% 1.35 [1.02, 1.79] Jin 2022 113 124 49 66 13.0% 1.23 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: $Ch^2 = 13.62$ , $df = 14$ (P = 0.48); $l^2 = 0\%$ Test for overall effect: $Z = 7.78$ (P < 0.00001)	Total events	1208		1008				
Test for overall effect: $Z = 11.69 (P < 0.00001)$ 1.8.2 > 3mth Zou 2013 65 82 20 39 5.5% 1.55 [1.12, 2.14] Fan 2014 40 50 35 50 7.1% 1.14 [0.91, 1.44] Jin 2014 56 64 46 57 9.9% 1.08 [0.93, 1.27] Li2 2015 69 80 55 80 11.2% 1.25 [1.06, 1.49] Wang 2015 28 30 22 30 4.5% 1.27 [1.01, 1.61] Zhang 2016 33 39 25 39 5.1% 1.32 [1.01, 1.73] Tao 2016 25 30 21 30 4.3% 1.19 [0.90, 1.58] Shao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Bao 2017 38 39 31 40 6.2% 1.26 [1.06, 1.50] Chen 2018 44 47 39 47 7.9% 1.32 [1.05, 1.43] Ai 2018 14 15 7 15 1.4% 2.00 [1.15, 3.49] Lian 2020 37 40 28 40 5.7% 1.32 [1.05, 1.65] Qiu 2021 27 30 20 30 4.1% 1.35 [1.05, 1.43] Subtotal (95% Cl) 754 648 100.0% 1.24 [1.17, 1.31] Total events 670 468 Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0% Test for overall effect: $Z = 7.78$ (P < 0.00001)	Heterogeneity: Chi <sup>2</sup> = 3	31.51, df = 3	34 (P = )	0.59); l <sup>2</sup> =	: 0%			
1.8.2 > 3mth         Zou 2013       65       82       20       39       5.5%       1.55 [1.12, 2.14]         =an 2014       40       50       35       50       7.1%       1.14 [0.91, 1.44]         Jin 2014       56       64       46       57       9.9%       1.08 [0.93, 1.27]         .i2 2015       69       80       55       80       11.2%       1.25 [1.06, 1.49]         Wang 2015       28       30       22       30       4.5%       1.27 [1.01, 1.61]         Zhang 2016       33       39       25       39       5.1%       1.32 [1.01, 1.73]         Tao 2016       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Chen 2018       44       47       39       47       7.9%       1.32 [1.02, 1.79]         Jin 2020       37       40       28       40       5.7%       1.32 [1.05, 1.43]         Subtotal (95% Cl)       754       648       100.0%       1.24 [1.17, 1.31]	Test for overall effect:	Z = 11.69 (F	P < 0.00	001)				
1.8.2 > 3mth         Zou 2013       65       82       20       39       5.5%       1.55 [1.12, 2.14]         Fan 2014       40       50       35       50       7.1%       1.14 [0.91, 1.44]         Jin 2014       56       64       46       57       9.9%       1.08 [0.93, 1.27]         Li2 2015       69       80       55       80       1.25 [1.06, 1.49]         Wang 2015       28       30       22       30       4.5%       1.27 [1.01, 1.61]         Zhang 2016       33       39       25       39       5.1%       1.32 [1.01, 1.73]         Tao 2016       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Chen 2018       44       47       39       47       7.9%       1.31 [0.97, 1.31]         Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Juin 2022       113       124       49       66       13.0%       1.23 [1.05, 1.43]         Subtotal (95% Cl)       754       648       100.0%       1.24 [1.17, 1.31]       1.5 <td></td> <td>,</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		,						
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Zou 2013	65	82	20	39	5.5%	1.55 [1,12, 2,14]	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Zou 2013 Fan 2014	65 40	82 50	20 35	39 50	5.5% 7.1%	1.55 [1.12, 2.14] 1.14 [0.91 1 44]	
Nang 2015       28       30       22       30       4.5%       1.27 [1.01, 1.61]         Zhang 2015       43       45       39       45       7.9%       1.10 [0.97, 1.26]         Liao 2016       33       39       25       39       5.1%       1.32 [1.01, 1.73]         Tao 2016       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Chen 2018       44       47       39       47       7.9%       1.13 [0.97, 1.31]         Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Dia 2020       37       40       28       40       5.7%       1.32 [1.02, 1.79]         Dia 2022       113       124       49       66       13.0%       1.23 [1.05, 1.43]         Subtotal (95% CI)       754       648       100.0%       1.24 [1.17, 1.31]       4.5       2.5	Zou 2013 Fan 2014 lin 2014	65 40 56	82 50 64	20 35 46	39 50	5.5% 7.1% 9.9%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27]	
Array 2015       43       45       39       45       7.9%       1.10 [0.97, 1.26]         Liao 2016       33       39       25       39       5.1%       1.32 [1.01, 1.73]         Fao 2016       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Bao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Chen 2018       44       47       39       47       7.9%       1.13 [0.97, 1.31]         Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Lian 2020       37       40       28       40       5.7%       1.32 [1.06, 1.65]         Qiu 2021       27       30       20       30       4.1%       1.35 [1.02, 1.79]         Jin 2022       113       124       49       66       13.0%       1.24 [1.17, 1.31]         Fotal events       670       468       100.0%       1.24 [1.17, 1.31]       4.1%       4.1%         Gest for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 i2 2015	65 40 56	82 50 64	20 35 46	39 50 57	5.5% 7.1% 9.9% 11.2%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06 1.49]	
Lining 2013       45       45       59       45       7.5%       1.10 [0.97, 1.29]         Liao 2016       33       39       25       39       5.1%       1.32 [1.01, 1.73]         Fao 2016       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Bao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Chen 2018       44       47       39       47       7.9%       1.13 [0.97, 1.31]         Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Lian 2020       37       40       28       40       5.7%       1.32 [1.02, 1.79]         Din 2022       113       124       49       66       13.0%       1.23 [1.05, 1.43]         Subtotal (95% CI)       754       648       100.0%       1.24 [1.17, 1.31]       Image: Chi2 = 13.62, df = 14 (P = 0.48); I^2 = 0%         Test for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Ji2 2015	65 40 56 69	82 50 64 80	20 35 46 55	39 50 57 80	5.5% 7.1% 9.9% 11.2%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 4.64]	
Lato 2010       33       39       25       39       5.1%       1.32 [1.01, 1.73]         Fao 2016       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Bao 2017       38       39       31       40       6.2%       1.26 [1.06, 1.50]         Chen 2018       44       47       39       47       7.9%       1.13 [0.97, 1.31]         Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Lian 2020       37       40       28       40       5.7%       1.32 [1.02, 1.79]         Jui 2021       27       30       20       30       4.1%       1.35 [1.02, 1.79]         Jui 2022       113       124       49       66       13.0%       1.24 [1.17, 1.31]         Subtotal (95% CI)       754       648       100.0%       1.24 [1.17, 1.31]       Image: 1.26 [0.00001)         Fest for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Nang 2015	65 40 56 69 28	82 50 64 80 30	20 35 46 55 22	39 50 57 80 30	5.5% 7.1% 9.9% 11.2% 4.5%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 1.61]	
Lab 2010       25       30       21       30       4.3%       1.19 [0.90, 1.58]         Shao 2017       38       39       31       40 $6.2\%$ 1.26 [1.06, 1.50]         Bao 2017       38       39       31       40 $6.2\%$ 1.26 [1.06, 1.50]         Chen 2018       44       47       39       47 $7.9\%$ 1.13 [0.97, 1.31]         Ai 2018       14       15       7       15 $1.4\%$ $2.00$ [1.15, 3.49]         Lian 2020       37       40       28       40 $5.7\%$ $1.32$ [1.06, 1.65]         Jui 2021       27       30       20       30 $4.1\%$ $1.35$ [1.02, 1.79]         Jin 2022       113       124       49       66       13.0% $1.23$ [1.05, 1.43]         Subtotal (95% CI)       754       648       100.0% $1.24$ [1.17, 1.31] $4.5\%$ Total events       670       468 $6.5\%$ $6.5\%$ $6.5\%$ $6.5\%$ Test for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Nang 2015 Zhang 2015	65 40 56 69 28 43	82 50 64 80 30 45	20 35 46 55 22 39	39 50 57 80 30 45	5.5% 7.1% 9.9% 11.2% 4.5% 7.9%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 1.61] 1.10 [0.97, 1.26]	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Nang 2015 Zhang 2015 Jiao 2016	65 40 56 69 28 43 33	82 50 64 80 30 45 39	20 35 46 55 22 39 25	39 50 57 80 30 45 39	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 5.1%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 1.61] 1.10 [0.97, 1.26] 1.32 [1.01, 1.73]	
380 2017       38       39       31       40 $6.2\%$ $1.26 [1.06, 1.50]$ Chen 2018       44       47       39       47 $7.9\%$ $1.13 [0.97, 1.31]$ Ai 2018       14       15       7       15 $1.4\%$ $2.00 [1.15, 3.49]$ Lian 2020       37       40       28       40 $5.7\%$ $1.32 [1.06, 1.65]$ Qiu 2021       27       30       20       30 $4.1\%$ $1.35 [1.02, 1.79]$ Jin 2022       113       124       49 $66$ $13.0\%$ $1.23 [1.05, 1.43]$ Subtotal (95% CI)       754       648 $100.0\%$ $1.24 [1.17, 1.31]$ Total events $670$ $468$ Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0% $0.5  0.7$ $1  1.5  2$ Test for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Jiz 2015 Nang 2015 Zhang 2015 Jiao 2016 Fao 2016	65 40 56 69 28 43 33 25	82 50 64 80 30 45 39 30	20 35 46 55 22 39 25 21	39 50 57 80 30 45 39 30	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 5.1% 4.3%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 1.61] 1.10 [0.97, 1.26] 1.32 [1.01, 1.73] 1.19 [0.90, 1.58]	
Chen 2018       44       47       39       47       7.9%       1.13 [0.97, 1.31]         Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Lian 2020       37       40       28       40       5.7%       1.32 [1.06, 1.65]         Qiu 2021       27       30       20       30       4.1%       1.35 [1.02, 1.79]         Jin 2022       113       124       49       66       13.0%       1.23 [1.05, 1.43]         Subtotal (95% CI)       754       648       100.0%       1.24 [1.17, 1.31]         Total events       670       468         Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0%       90%       Favours [control]	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Nang 2015 Zhang 2015 Jiao 2016 Fao 2016 Shao 2017	65 40 56 69 28 43 33 25 38	82 50 64 80 30 45 39 30 39	20 35 46 55 22 39 25 21 31	39 50 57 80 30 45 39 30 40	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 5.1% 4.3% 6.2%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 1.61] 1.10 [0.97, 1.26] 1.32 [1.01, 1.73] 1.19 [0.90, 1.58] 1.26 [1.06, 1.50]	
Ai 2018       14       15       7       15       1.4%       2.00 [1.15, 3.49]         Lian 2020       37       40       28       40       5.7%       1.32 [1.06, 1.65]         Qiu 2021       27       30       20       30       4.1%       1.35 [1.02, 1.79]         Jin 2022       113       124       49       66       13.0%       1.23 [1.05, 1.43]         Subtotal (95% CI)       754       648       100.0%       1.24 [1.17, 1.31]         Total events       670       468         Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); I <sup>2</sup> = 0%         Test for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Jiz 2015 Wang 2015 Zhang 2015 Liao 2016 Fao 2016 Shao 2017 Bao 2017	65 40 56 69 28 43 33 25 38 38 38	82 50 64 80 30 45 39 30 39 39	20 35 46 55 22 39 25 21 31 31	39 50 57 80 30 45 39 30 40	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 5.1% 4.3% 6.2% 6.2%	$\begin{array}{c} 1.55 \; [1.12,\; 2.14] \\ 1.14 \; [0.91,\; 1.44] \\ 1.08 \; [0.93,\; 1.27] \\ 1.25 \; [1.06,\; 1.49] \\ 1.27 \; [1.01,\; 1.61] \\ 1.10 \; [0.97,\; 1.26] \\ 1.32 \; [1.01,\; 1.73] \\ 1.19 \; [0.90,\; 1.58] \\ 1.26 \; [1.06,\; 1.50] \\ 1.26 \; [1.06,\; 1.50] \end{array}$	
Lian 2020 37 40 28 40 5.7% 1.32 [1.06, 1.65] Qiu 2021 27 30 20 30 4.1% 1.35 [1.02, 1.79] Jin 2022 113 124 49 66 13.0% 1.23 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Fotal events 670 468 Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0% Test for overall effect: Z = 7.78 (P < 0.00001) Fotal events 0.5 0.7 1 1.5 2 Favours [experimental] Favours [control]	Zou 2013 Fan 2014 Jin 2014 Jin 2014 Jia 2015 Wang 2015 Zhang 2015 Liao 2016 Gao 2016 Shao 2017 Bao 2017 Chen 2018	65 40 56 69 28 43 33 25 38 38 38 44	82 50 64 80 30 45 39 30 39 39 47	20 35 46 55 22 39 25 21 31 31 39	39 50 57 80 30 45 39 30 40 40	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 5.1% 4.3% 6.2% 6.2% 7.9%	1.55 [1.12, 2.14] 1.14 [0.91, 1.44] 1.08 [0.93, 1.27] 1.25 [1.06, 1.49] 1.27 [1.01, 1.61] 1.10 [0.97, 1.26] 1.32 [1.01, 1.73] 1.19 [0.90, 1.58] 1.26 [1.06, 1.50] 1.26 [1.06, 1.50] 1.13 [0.97, 1.31]	
Qiu 2021 27 30 20 30 4.1% 1.35 [1.02, 1.79] lin 2022 113 124 49 66 13.0% 1.23 [1.05, 1.43] Subtotal (95% CI) 754 648 100.0% 1.24 [1.17, 1.31] Fotal events 670 468 Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0% Fest for overall effect: Z = 7.78 (P < 0.00001) Fotal events differences Chi <sup>2</sup> = 0.02, df = 4 (P = 0.95), l <sup>2</sup> = 0% Fest for overall effect: Z = 7.78 (P < 0.00001) Fotal events differences Chi <sup>2</sup> = 0.02, df = 4 (P = 0.95), l <sup>2</sup> = 0%	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Xhang 2015 Zhang 2015 Liao 2016 Gao 2016 Shao 2017 Bao 2017 Chen 2018 Ai 2018	65 40 56 69 28 43 33 25 38 38 38 44 14	82 50 64 80 30 45 39 30 39 39 47	20 35 46 55 22 39 25 21 31 31 31 39 7	39 50 57 80 30 45 39 30 40 40 47	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 5.1% 4.3% 6.2% 6.2% 7.9% 1.4%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.13 \ [0.97, 1.31] \\ 2.00 \ [1.15, 3.49] \end{array}$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Nang 2015 Zhang 2015 Liao 2016 Gao 2016 Shao 2017 Shao 2017 Chen 2018 Ai 2018 Lian 2020	65 40 56 69 28 43 33 25 38 38 44 14 37	82 50 64 80 30 45 39 30 39 39 47 15 40	20 35 46 55 22 39 25 21 31 31 39 7 28	39 50 57 80 30 45 39 30 40 40 47 15 40	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 6.2% 6.2% 6.2% 7.9% 1.4% 5.7%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.31 \ [0.97, 1.31] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.06, 1.65] \end{array}$	
Subtotal (95% CI)       754       648       100.0%       1.24 [1.17, 1.31]         Fotal events       670       468         Heterogeneity: Chi² = 13.62, df = 14 (P = 0.48); l² = 0%         Fest for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Vang 2015 Zhang 2015 Jiao 2016 Fao 2016 Shao 2017 Chen 2017 Ohen 2018 Ji 2018 Jian 2020 Qiu 2021	65 40 56 69 28 43 33 25 38 38 44 14 37 27	82 50 64 80 30 45 39 30 39 39 47 15 40 30	20 35 46 55 22 39 25 21 31 31 39 7 28 20	39 50 57 80 30 45 39 30 40 40 47 15 40 30	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 6.2% 6.2% 7.9% 1.4% 5.7% 4.1%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.51] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \end{array}$	
Total events       670       468         Heterogeneity: Chi² = 13.62, df = 14 (P = 0.48); l² = 0%         Test for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Jin 2014 Jin 2015 Nang 2015 Zhang 2015 Jiao 2016 Fao 2016 Shao 2017 Chen 2018 Jian 2020 Qiu 2021 Jin 2022	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113	82 50 64 80 30 45 39 30 39 47 15 40 30 124	20 35 46 55 22 39 25 21 31 31 39 7 28 20 49	39 50 57 80 30 45 39 30 40 40 47 15 40 30 66	5.5% 7.1% 9.9% 11.2% 7.9% 5.1% 4.3% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.51] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.02, 1.79] \\ 1.23 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \end{array}$	
Heterogeneity: Chi <sup>2</sup> = 13.62, df = 14 (P = 0.48); l <sup>2</sup> = 0%         Test for overall effect: Z = 7.78 (P < 0.00001)	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Vang 2015 Zhang 2015 Liao 2016 Fao 2016 Shao 2017 Bao 2017 Chen 2018 Ai 2018 Lian 2020 Qiu 2021 Jin 2022 Subtotal (95% CI)	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113	82 50 64 80 30 45 39 30 39 47 15 40 30 124 754	20 35 46 55 22 39 25 21 31 31 31 39 7 28 20 49	39 50 57 80 30 45 39 30 40 40 47 15 40 30 66 <b>648</b>	5.5% 7.1% 9.9% 11.2% 7.9% 5.1% 4.3% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0% 100.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.32 \ [1.06, 1.61] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	
Test for overall effect: Z = 7.78 (P < 0.00001) 0.5 0.7 1 1.5 2 Favours [experimental] Favours [control]	Zou 2013 Fan 2014 Jin 2014 Ji2 2015 Wang 2015 Zhang 2015 Zhang 2015 Chang 2016 Shao 2017 Shao 2017 Chen 2018 Ai 2018 Jian 2020 Qiu 2021 Jin 2022 Subtotal (95% CI) Fotal events	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113 670	82 50 64 80 30 39 39 39 47 15 40 30 124 754	20 35 46 55 22 39 25 21 31 31 31 39 7 28 20 49	39 50 57 80 30 45 39 30 40 40 47 15 40 30 66 648	5.5% 7.1% 9.9% 11.2% 7.9% 5.1% 4.3% 6.2% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.31 \ [0.97, 1.31] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	
0.5         0.7         1         1.5         2           Favours [experimental]         Favours [control]	Zou 2013 Fan 2014 Jin 2014 Jin 2014 Jin 2015 Wang 2015 Zhang 2015 Zhang 2015 Gao 2016 Shao 2017 Shao 2017 Chen 2018 Ai 2018 Jin 2020 Qiu 2021 Jin 2022 Subtotal (95% CI) Fotal events Heterogeneitv: Chi <sup>2</sup> = 1	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113 670 13.62, df = 1	82 50 64 80 30 39 39 39 47 15 40 30 124 754	20 35 46 55 22 39 25 21 31 31 31 39 7 28 20 49 468 20 49	39 50 57 80 30 45 39 30 40 40 40 47 15 40 30 66 648	5.5% 7.1% 9.9% 11.2% 4.5% 5.1% 4.3% 6.2% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0% 100.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.32 \ [1.06, 1.65] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	
I         I         I         I           0.5         0.7         1         1.5         2           Favours [experimental]	Zou 2013 Zou 2013 Zou 2014 Jin 2014 Jin 2014 Jiz 2015 Vang 2015 Zhang 2015 Zhang 2016 Gao 2016 Gao 2017 Chen 2018 Ai 2018 Lian 2020 Qiu 2021 Jin 2022 Subtotal (95% CI) Fotal events Heterogeneity: Chi <sup>2</sup> = - Fest for overall effect:	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113 670 13.62, df = 1 Z = 7, 78 (P	82 50 64 80 30 39 39 39 47 15 40 30 124 754 14 (P = ( < 0.000	20 35 46 55 22 39 25 21 31 31 31 39 7 28 20 49 468 ).48);   <sup>2</sup> = 01)	39 50 57 80 45 39 30 40 40 47 15 40 30 66 648 0%	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 4.3% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0% 100.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.31 \ [0.97, 1.31] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	
0.5 0.7 1 1.5 2 Favours [experimental] Favours [control]	Zou 2013 Zou 2013 Zou 2014 Jin 2014 Jin 2014 Jiz 2015 Vang 2015 Zhang 2015 Zhang 2016 Gao 2016 Gao 2017 Chen 2018 Ai 2018 Lian 2020 Qiu 2021 Jin 2022 Subtotal (95% CI) Fotal events Heterogeneity: Chi <sup>2</sup> = 1 Fest for overall effect:	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113 670 13.62, df = 1 Z = 7.78 (P	82 50 64 80 30 45 39 30 39 47 15 40 30 124 754 14 (P = ( < 0.000	20 35 46 55 21 31 31 31 39 7 28 20 49 468 ).48);   <sup>2</sup> = 01)	39 50 57 80 45 39 30 40 40 40 47 15 40 30 66 648 0%	5.5% 7.1% 9.9% 11.2% 4.5% 7.9% 4.3% 6.2% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0% 100.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.23 \ [1.02, 1.31] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	
Favours [experimental] Favours [control]	Zou 2013 Zou 2013 Fan 2014 Jin 2014 Jiz 2015 Vang 2015 Vang 2015 Vang 2015 Jiao 2016 Shao 2017 Johen 2018 Jiao 2017 Dihen 2018 Jian 2020 Diu 2021 Jin 2022 Subtotal (95% CI) Total events Test for overall effect:	65 40 56 69 28 43 33 25 38 44 14 37 27 113 670 13.62, df = 1 Z = 7.78 (P	82 50 64 80 30 45 39 30 39 47 15 40 30 124 754 14 (P = ( < 0.000	20 35 46 55 22 39 25 21 31 31 31 39 7 28 20 49 468 ).48);   <sup>2</sup> = 01)	39 50 57 80 30 45 39 30 40 40 47 15 40 30 66 648 0%	5.5% 7.1% 9.9% 11.2% 4.5% 5.1% 4.3% 6.2% 6.2% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0% 100.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.31 \ [0.97, 1.31] \\ 2.00 \ [1.15, 3.49] \\ 1.32 \ [1.06, 1.65] \\ 1.35 \ [1.02, 1.79] \\ 1.23 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	
est for supprovid differences: CDF = 0.03, $df = 1.02 = 0.85$ ) $F = 0.06$	Zou 2013 Fan 2014 Jin 2014 Jiz 2015 Vang 2015 Vang 2015 Vang 2015 Jiao 2016 Fao 2016 Shao 2017 Shao 2017 Chen 2018 Jian 2020 Qiu 2021 Jin 2022 Subtotal (95% CI) Total events Teterogeneity: Chi <sup>2</sup> = 1 Test for overall effect: 1	65 40 56 69 28 43 33 25 38 38 44 14 37 27 113 670 13.62, df = 1 Z = 7.78 (P	82 50 64 80 45 39 30 39 39 47 15 40 30 124 754 14 (P = ( < 0.000	20 35 46 55 22 39 25 21 31 31 31 39 7 28 20 49 468 2.0,48);   <sup>2</sup> = 01)	39 50 57 80 30 45 39 30 40 40 47 5 40 30 66 648	5.5% 7.1% 9.9% 11.2% 7.9% 5.1% 4.3% 6.2% 7.9% 1.4% 5.7% 4.1% 13.0% 100.0%	$\begin{array}{c} 1.55 \ [1.12, 2.14] \\ 1.14 \ [0.91, 1.44] \\ 1.08 \ [0.93, 1.27] \\ 1.25 \ [1.06, 1.49] \\ 1.27 \ [1.01, 1.61] \\ 1.10 \ [0.97, 1.26] \\ 1.32 \ [1.01, 1.73] \\ 1.19 \ [0.90, 1.58] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.26 \ [1.06, 1.50] \\ 1.32 \ [1.06, 1.65] \\ 1.32 \ [1.02, 1.79] \\ 1.32 \ [1.05, 1.43] \\ 1.24 \ [1.17, 1.31] \end{array}$	

Forest plot comparing the efficacy of different courses of treatment.



increase the oxygen carrying capacity of brain cells (78-80). In addition, scalp acupuncture has a certain awakening effect on brain cells in the dormant state and can repair the damaged neuronal cells, improving language disorders and intelligence levels (81, 82). Electroacupuncture can stimulate the proliferation and differentiation of endogenous neural stem cells in the hippocampus, preventing their excessive differentiation into astrocytes and helping to accelerate the differentiation of e NSCs into neurons, thus playing a positive role in nerve regeneration (83). It has been found that electroacupuncture can increase the expression of p53 deacetylated Bcl-2, reduce the levels of Bax and Caspase-3, cut off the endogenous apoptotic pathway, and play an anti-apoptotic effect; it can also downregulate CHOP and Caspase-12 mRNA expression to intervene in endoplasmic reticulum stress (ERS), thus reducing cell apoptosis and providing positive effects to the brain (84-86). Consequently, advocating for the broader clinical utilization of acupuncture as a therapeutic intervention for aphasia in children with CP is deemed valuable.

In our study, only one study reported adverse events (25), primarily local bleeding, subcutaneous petechiae, and crying. From this, it can be seen that the clinical effect of acupuncture combined with language training in the treatment of aphasic children with CP is remarkable and safe.

Nevertheless, our study has certain limitations. Firstly, the scope of our research is confined to single-center RCTs originating from China, where acupuncture is predominantly utilized, thereby leading to geographical constraints; Secondly, the reliability of our study was limited by the sample size, especially concerning laser acupuncture and auricular point seed-pressing, with only one RCT was included in this study; Thirdly, the specific nature of acupuncture therapy makes it challenging to achieve participant and personnel blinding, predisposing the trials to a heightened risk of bias; Additionally, the literature included in our study is exclusively in Chinese due to the regions and populations where acupuncture is commonly practiced, which may have influenced the overall quality of the studies. Despite these limitations, our meta-analysis offers an exhaustive assessment of the clinical application of acupuncture in conjunction with language training for treating aphasia in children with CP.



# 6 Conclusion

Acupuncture demonstrates efficacy when used as an adjunctive treatment for aphasia in children with CP, not only improving the patient's adaptive, verbal, fine motor, and personal social behaviours, but also the patient's assessment of dysarthria, oral motor function, expressive language development quotient, and language comprehension development quotient, with significant clinical efficacy. Our findings may provide valuable guidance for the use of acupuncture in clinical applications.

# Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding authors.

# Author contributions

SZL: Data curation, Investigation, Software, Writing – original draft. YJL: Data curation, Software, Writing – review & editing.

JC: Data curation, Software, Writing – review & editing. JWS: Conceptualization, Funding acquisition, Resources, Supervision, Writing – review & editing, Project administration. LZ: Conceptualization, Project administration, Resources, Supervision, Writing – review & editing, Funding acquisition.

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# **Conflict of interest**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



# **Generative AI statement**

The authors declare that no Gen AI was used in the creation of this manuscript.

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# Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fneur.2025.1502023/ full#supplementary-material

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