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eAppendix 1 Search strategy

1. MEDLINE via PubMed Strategy

((electroacupuncture or "acupuncture"[mesh terms] or "acupuncture"[all fields] or "acupuncture therapy"[mesh terms] or "acupuncture therapy"[all fields] or auricular acupuncture or auricular needle or ear acupuncture or auricular plaster therapy or transcutaneous electric nerve stimulation or tens or electric stimulation therapy or laser acupuncture or auricular point sticking or acupressure or dry needle or scalp acupuncture or scalp sensory or scalp stimulation or filliform needle or filiform needle) and (randomized controlled trial or Controlled Clinical Trial or placebo[Title/Abstract] or sham[Title/Abstract] or randomized[Title/Abstract] or randomly[Title/Abstract] or trial[Title/Abstract] or groups[Title/Abstract])) not (animals NOT humans) and ("2015/01/01"[date - publication] : "2019/12/31"[date - publication])

2. EMBASE Search strategy

('electroacupuncture'/exp OR electroacupuncture OR 'acupuncture therapy'/exp OR 'acupuncture therapy' OR (('acupuncture'/exp OR acupuncture) AND ('therapy'/exp OR therapy)) OR 'acupuncture moxibustion' OR 'acupuncture moxibustion'/exp OR (('acupuncture'/exp OR acupuncture) AND moxibustion) OR 'auricular acupuncture'/exp OR 'auricular acupuncture' OR (auricular AND ('acupuncture'/exp OR acupuncture)) OR 'auricular needle'/exp OR 'auricular needle' OR (auricular AND ('needle'/exp OR needle)) OR 'ear acupuncture'/exp OR 'ear acupuncture' OR (('ear'/exp OR ear) AND ('acupuncture'/exp OR acupuncture)) OR 'auricular plaster therapy' OR (auricular AND ('plaster'/exp OR plaster) AND ('therapy'/exp OR therapy)) OR 'transcutaneous electric nerve stimulation'/exp OR 'transcutaneous electric nerve stimulation' OR (transcutaneous AND electric AND ('nerve'/exp OR nerve) AND ('stimulation'/exp OR stimulation)) OR tens OR 'electric stimulation therapy'/exp OR 'electric stimulation therapy' OR (electric AND ('stimulation'/exp OR stimulation) AND ('therapy'/exp OR therapy)) OR 'laser acupuncture'/exp OR 'laser acupuncture' OR (('laser'/exp OR laser) AND ('acupuncture'/exp OR acupuncture)) OR 'auricular point sticking' OR (auricular AND point AND sticking) OR 'acupressure'/exp OR acupressure OR 'dry needle' OR (dry AND ('needle'/exp OR needle)) OR 'scalp acupuncture'/exp OR 'scalp acupuncture' OR (('scalp'/exp OR scalp) AND ('acupuncture'/exp OR acupuncture)) OR 'scalp sensory' OR (('scalp'/exp OR scalp) AND ('sensory'/exp OR sensory)) OR 'scalp stimulation' OR (('scalp'/exp OR scalp) AND ('stimulation'/exp OR stimulation)) OR 'filliform needle' OR (filliform AND ('needle'/exp OR needle)) OR 'filiform needle' OR (filiform AND ('needle'/exp OR needle)) AND ('randomized controlled trial'/exp OR 'randomized controlled trial' OR (randomized AND controlled AND ('trial'/exp OR trial)) OR 'controlled clinical trial'/exp OR 'controlled clinical trial' OR (controlled AND ('clinical'/exp OR clinical) AND ('trial'/exp OR trial)) OR 'placebo'/exp OR placebo OR sham OR randomized OR randomly OR 'trial'/exp OR trial OR groups) AND 'human'/exp NOT 'animal'/de NOT 'rat'/exp NOT 'mouse'/exp AND (2015:py OR 2016:py OR 2017:py OR 2018:py OR 2019:py)

3. CENTRAL

- **Title Abstract Keyword**

(electroacupuncture OR acupuncture OR auricular needle OR auricular plaster therapy OR transcutaneous electric nerve stimulation OR electric stimulation therapy OR auricular point sticking OR acupressure OR dry needle OR scalp sensory OR scalp stimulation OR filiform needle OR tens) AND (randomized controlled trial OR controlled clinical trial OR placebo OR sham OR randomized OR randomly OR trial OR groups) NOT (animal or rat or mouse)

- Publication year: from 2015 to 2019

4. CNKI search strategy [Chinese database]

English translation from Chinese version

- Professional retrieval:

(SU=('acupuncture'+ 'electroacupuncture'+ 'acupuncture and moxibustion'+ 'laser acupuncture'+ 'transcutaneous electric'+ 'transcutaneous nerve'+ 'electric stimulation'+ 'electroanalgesia'+ 'body acupuncture'+ 'auricular acupuncture'+ 'scalp acupuncture'+ 'filiform needle'+ 'dry needle'+ 'auricular point sticking'+ 'acupressure'+ 'laser acupoint irradiation'+ 'transcutaneous electric stimulation treatment'+ 'transcutaneous electric stimulation nerve'+ 'transcutaneous electric stimulation'+ 'acupuncture treatment'+ 'acupuncture and moxibustion therapy'+ 'transcutaneous nerve electric stimulation'+ 'laser acupoint'- 'animal'- 'rat'- 'mouse') OR

TI=('acupuncture'+ 'electroacupuncture'+ 'acupuncture and moxibustion'+ 'laser acupuncture'+ 'transcutaneous electric'+ 'transcutaneous nerve'+ 'electric stimulation'+ 'electroanalgesia'+ 'body acupuncture'+ 'auricular acupuncture'+ 'scalp acupuncture'+ 'filiform needle'+ 'dry needle'+ 'auricular point sticking'+ 'acupressure'+ 'laser acupoint irradiation'+ 'transcutaneous electric stimulation treatment'+ 'transcutaneous electric stimulation nerve'+ 'transcutaneous electric stimulation'+ 'acupuncture treatment'+ 'acupuncture and moxibustion therapy'+ 'transcutaneous nerve electric stimulation'+ 'laser acupoint'- 'animal'- 'rat'- 'mouse') OR

KY=('acupuncture'+ 'electroacupuncture'+ 'acupuncture and moxibustion'+ 'laser acupuncture'+ 'transcutaneous electric'+ 'transcutaneous nerve'+ 'electric stimulation'+ 'electroanalgesia'+ 'body acupuncture'+ 'auricular acupuncture'+ 'scalp acupuncture'+ 'filiform needle'+ 'dry needle'+ 'auricular point sticking'+ 'acupressure'+ 'laser acupoint irradiation'+ 'transcutaneous electric stimulation treatment'+ 'transcutaneous electric stimulation nerve'+ 'transcutaneous electric stimulation'+ 'acupuncture treatment'+ 'acupuncture and moxibustion therapy'+ 'transcutaneous nerve electric stimulation'+ 'laser acupoint'- 'animal'- 'rat'- 'mouse') OR

AB=('acupuncture'+ 'electroacupuncture'+ 'acupuncture and moxibustion'+ 'laser acupuncture'+ 'transcutaneous electric'+ 'transcutaneous nerve'+ 'electric stimulation'+ 'electroanalgesia'+ 'body acupuncture'+ 'auricular acupuncture'+ 'scalp acupuncture'+ 'filiform needle'+ 'dry needle'+ 'auricular point

sticking'+acupressure'+laser point irradiation'+transcutaneous electric stimulation treatment'+transcutaneous electric stimulation nerve'+transcutaneous electric stimulation'+acupuncture treatment'+acupuncture and moxibustion therapy'+transcutaneous nerve electric stimulation'+laser acupoint'-animal'-rat'-mouse')) AND (SU='random' or TI='random' or KY='random' or AB='random')

Note: SU=subject, TI=title, KY=keyword, AB=abstract

- Publication date: from 2015-01-01 to 2019-12-31.

Chinese version

- 专业检索:

(SU=('针刺'+电针'+针灸'+激光针'+经皮电'+经皮神经'+电刺激'+电止痛'+体针'+耳针'+头针'+毫针'+干针'+耳穴贴压'+穴位按压'+激光穴位照射'+经皮电刺激治疗'+经皮电刺激神经'+经皮电刺激'+针刺治疗'+针灸疗法'+经皮神经电刺激'+激光穴位'-动物'-鼠') OR TI=('针刺'+电针'+针灸'+激光针'+经皮电'+经皮神经'+电刺激'+电止痛'+体针'+耳针'+头针'+毫针'+干针'+耳穴贴压'+穴位按压'+激光穴位照射'+经皮电刺激治疗'+经皮电刺激神经'+经皮电刺激'+针刺治疗'+针灸疗法'+经皮神经电刺激'+激光穴位'-动物'-鼠') OR KY=('针刺'+电针'+针灸'+激光针'+经皮电'+经皮神经'+电刺激'+电止痛'+体针'+耳针'+头针'+毫针'+干针'+耳穴贴压'+穴位按压'+激光穴位照射'+经皮电刺激治疗'+经皮电刺激神经'+经皮电刺激'+针刺治疗'+针灸疗法'+经皮神经电刺激'+激光穴位'-动物'-鼠') OR AB=('针刺'+电针'+针灸'+激光针'+经皮电'+经皮神经'+电刺激'+电止痛'+体针'+耳针'+头针'+毫针'+干针'+耳穴贴压'+穴位按压'+激光穴位照射'+经皮电刺激治疗'+经皮电刺激神经'+经皮电刺激'+针刺治疗'+针灸疗法'+经皮神经电刺激'+激光穴位'-动物'-鼠')) AND (SU='随机' or TI='随机' or KY='随机' or AB='随机')

注: SU=主题, TI=题名, KY=关键词, AB=摘要

- 发表时间 (Publication date): 2015-01-01 至 2019-12-31.

5. Wanfang search strategy [Chinese database]

English translation from Chinese version

- Professional retrieval:

(Title OR Keyword:(“electroacupuncture” OR “laser acupuncture” OR “transcutaneous electric” OR “transcutaneous nerve” OR “electric stimulation” OR “electroanalgesia” OR “body acupuncture” OR “auricular acupuncture” OR “scalp acupuncture” OR “filiform needle” OR “dry needle” OR “auricular point sticking” OR “acupressure” OR “laser acupoint irradiation” OR “tens” OR “analgesic skin electrical stimulation” OR “acupuncture treatment” OR “acupuncture and moxibustion therapy”) OR Abstract:(“electroacupuncture” OR “laser acupuncture” OR “transcutaneous electric” OR “transcutaneous nerve” OR “electric stimulation” OR “electroanalgesia” OR “body acupuncture” OR “auricular acupuncture” OR “scalp acupuncture” OR “filiform needle” OR “dry needle” OR “auricular point sticking” OR “acupressure” OR “laser acupoint irradiation” OR “tens” OR “analgesic skin electrical stimulation” OR “acupuncture treatment” OR “acupuncture and

moxibustion therapy”) OR Title OR Keyword:(“acupuncture and moxibustion” OR “acupuncture”) OR Abstract:(“acupuncture and moxibustion” OR “acupuncture”) AND (Title OR Keyword:“random” OR Abstract:“random”) NOT (Title OR Keyword:(“animal” OR “rat” OR “mouse”) OR Abstract:(“animal” OR “rat” OR “mouse”))

- Publication type: Journal articles.
- Publication date: from 2015 to 2019.

Chinese version

- 专业检索:
(题名或关键词:(“电针” OR “激光针” OR “经皮电” OR “经皮神经” OR “电刺激” OR “电止痛” OR “体针” OR “耳针” OR “头针” OR “毫针” OR “干针” OR “耳穴贴压” OR “穴位按压” OR “激光穴位照射” OR “tens” OR “镇痛皮肤电刺激” OR “针刺治疗” OR “针灸疗法”) OR 摘要:(“电针” OR “激光针” OR “经皮电” OR “经皮神经” OR “电刺激” OR “电止痛” OR “体针” OR “耳针” OR “头针” OR “毫针” OR “干针” OR “耳穴贴压” OR “穴位按压” OR “激光穴位照射” OR “tens” OR “镇痛皮肤电刺激” OR “针刺治疗” OR “针灸疗法”) OR 题名或关键词:(“针灸” OR “针刺”) OR 摘要:(“针灸” OR “针刺”)) AND (题名或关键词:(“随机” OR 摘要:“随机”) NOT (题名或关键词:(“动物” OR “鼠”) OR 摘要:(“动物” OR “鼠”))
- 文献类型(Publication type): 期刊论文(Journal articles).
- 发表时间 (Publication date): 2015 至 2019.

6. VIP search strategy [Chinese database]

English translation from Chinese version

- Retrieval type search:
(U=(electroacupuncture OR laser acupuncture OR transcutaneous electric OR transcutaneous electric stimulation treatment OR transcutaneous electric stimulation nerve OR transcutaneous electric stimulation OR transcutaneous nerve OR electric stimulation OR electroanalgesia OR body acupuncture OR auricular acupuncture OR scalp acupuncture OR filiform needle OR dry needle OR auricular point sticking OR acupressure OR laser acupoint irradiation OR “tens” OR analgesic skin electrical stimulation OR acupuncture treatment OR acupuncture and moxibustion therapy OR transcutaneous nerve electric stimulation OR laser acupoint) OR M=(acupuncture and moxibustion OR acupuncture) OR R=(acupuncture and moxibustion OR acupuncture)) AND (M=random OR R=random) NOT (M=(animal OR rat OR mouse) OR R=(animal OR rat OR mouse))
Note: U=all fields, M=title/keyword, R=abstract
- publication date: from 2015 to 2019.

Chinese version

- 检索式检索:
(U=(电针 OR 激光针 OR 经皮电 OR 经皮电刺激治疗 OR 经皮电刺激神经 OR 经皮电刺激 OR 经皮神经 OR 电刺激 OR 电止痛 OR 体针 OR 耳针 OR 头针 OR

毫针 OR 干针 OR 耳穴贴压 OR 穴位按压 OR 激光穴位照射 OR “tens” OR 镇痛皮肤电刺激 OR 针刺治疗 OR 针灸疗法 OR 经皮神经电刺激 OR 激光穴位) OR M=(针灸 OR 针刺) OR R=(针灸 OR 针刺)) AND (M=随机 OR R=随机) NOT (M=(动物 OR 鼠) OR R=(动物 OR 鼠))

注：字段标识符 U=任意字段、M=题名或关键词、R=文摘

- 时间限定 (publication date): 2015 至 2019.

7. CBM search strategy [Chinese database]

English translation from Chinese version:

#1 【Rapid retrieval】acupuncture OR electroacupuncture OR auricular acupuncture OR scalp acupuncture OR body acupuncture OR filiform needle OR acupuncture and moxibustion OR acupuncture and moxibustion therapy OR transcutaneous nerve electric stimulation OR transcutaneous nerve OR electric stimulation OR laser acupuncture OR auricular point sticking OR dry needle OR acupressure OR laser acupoint irradiation OR acupuncture therapy OR electric stimulation therapy (publication date: 2015-2019)

#2 【Subject retrieval】acupoint, auricular acupuncture (publication date: 2015-2019)

#3 【Rapid retrieval】randomized controlled trial OR randomized controlled study OR randomized controlled clinical OR multicenter study OR multicenter clinical OR multicenter (publication date: 2015-2019)

#4 【Rapid retrieval】animal OR rat OR mouse (publication date: 2015-2019)

#5 (#1 or #2) and #3

#6 (#1 or #2) and publication type (randomized controlled trial OR multicenter study)

#7 (#5 or #6) not #4

Chinese version:

#1 【快速检索状态】：针刺 OR 电针 OR 耳针 OR 头针 OR 体针 OR 毫针 OR 针灸 OR 针灸疗法 OR 经皮神经电刺激 OR 经皮神经 OR 电刺激 OR 激光针 OR 耳穴贴压 OR 干针 OR 穴位按压 OR 激光穴位照射 OR 针刺疗法 OR 电刺激疗法 (时间：2015-2019)

#2 【主题检索状态】：穴位, 耳针 (时间：2015-2019)

#3 【快速检索状态】：随机对照试验 OR 随机对照研究 OR 随机对照临床 OR 多中心研究 OR 多中心临床 OR 多中心 (时间：2015-2019)

#4 【快速检索状态】：动物 OR 大鼠 OR 小鼠 OR 鼠 (时间：2015-2019)

#5 (#1 or #2) and #3

#6 (#1 or #2) and 文献类型限定 (随机对照试验、多中心研究)

#7 (#5 or #6) not #4

eAppendix 2

eAppendix 2 Independent variables ranked by importance

Order	Independent variable	Category
1	Allocation concealment	1=Probably yes 2=Probably no
2	Control group*	1=Penetrating needle sham 2=Non-penetrating needling sham 3=Non-needle sham 4=High-intensity control (No sham) 5=Usual care (No sham) 6=Low-intensity control (No sham)
3	Total number of acupuncture treatments	1=Low 2=High
4	Randomization sequence generation	1=Probably yes 2=Probably no
5	Acupuncture stimulation	1=Manual acupuncture 2=Electro-acupuncture 3=Laser acupuncture 4=TEAS 5=Acupressure
6	Acupuncture type	1=Penetrating acupuncture 2=Non-penetrating acupuncture
7	Blinding of outcome assessors	1=Probably yes 2=Probably no
8	Trial registration	1=Reported 2=Not reported
9	Sample size	1=101-149 2=150-499 3=>=500

10	Therapeutic areas	<p>1=Musculoskeletal system</p> <p>2=Neurology</p> <p>3=Gastroenterology</p> <p>4=Urology</p> <p>5=Mental health</p> <p>6=Obstetrics and gynecology</p> <p>7=Dermatology</p> <p>8=Respirology</p> <p>9=Sleep-wake disorders</p> <p>10=Cardiovascular disorders</p> <p>11=Ophthalmology</p> <p>12=Endocrinology and nutrition</p> <p>13=Oncology</p> <p>14=Trauma and injuries</p> <p>15=Otorhinolaryngology</p> <p>16=Acupuncture anesthesia</p> <p>17=Pediatrics</p>
11	Blinding of participants	<p>1=Probably yes</p> <p>2=Probably no</p>
12	Frequency of treatment sessions	<p>1=Low</p> <p>2=High</p>
13	Type of outcome	<p>1=Pain</p> <p>2=Quality of life (e.g., general quality of life, disease specific quality of life)</p> <p>3=Function</p> <p>4=Non-pain Symptoms (such as anxiety, depression, etc.)</p> <p>5=Major events</p>
14	Country	<p>1=Western countries (countries in Europe, America, Australia and Africa)</p> <p>2=Eastern countries (Asian countries)</p> <p>3= both Western and Eastern countries</p>
15	Acupuncture regimen	<p>1=Fixed formula</p> <p>2=Flexible formula</p> <p>3=Individualized formula</p>
16	Location of needles	<p>1=Local points only</p> <p>2=Distal points only</p> <p>3=Both local and distal points (only for body acupuncture)</p>

17	Education or training of practitioner	1=Systematic acupuncture or TCM education (undergraduate, graduate, diploma training) 2=Short term training (none of the training mention in 1)
18	Number of centers	1=Single center 2=Multicenter
19	Number of needles	1=1-4 2=5-9 3=10-14 4=15-20 5=>20
20	Depth of insertion	1=Deep needling (> 10mm) 2=Superficial needling (< 10mm)
21	Acupuncture manipulation after needles insertion	1=Yes 2=No 3=Not reported 4=Not applicable
22	Needle retention time	1= \geq 20min 2=<20min
23	Intensity of stimulation	1=Strong stimulation 2=Moderate stimulation 3=Mild stimulation 4=Not reported
24	Acupuncturist experience	1=<5y 2=5-10y 3=>10y
25	Acupuncture-specific patient-practitioner interactions	1=Yes (trialists allowed or encouraged the interactions) 2=No (the interactions were prohibited) 3=Not reported
26	Clinical specialty of practitioner	1=Acupuncturist 2=Others 3=Not reported
27	Publication language	1=English 2=Chinese 3=Other language
28	Source of acupuncture regimen	1=Expert consensus 2=Textbook or literature 3=Clinical experience 4=Mix of some

		5=Unclear
29	Needling angle	1=Reported 2=Not reported
30	Needling direction	1=Reported 2=Not reported
31	De qi	1=Yes 2=No 3=Not reported 4=Not applicable
32	Patient expectations	1=Reported 2=Not reported
33	Funding availability	1=Reported 2=Not reported
34	Style of acupuncture	1=TCM acupuncture (TCMA) 2=Japanese acupuncture (JA) 3=Korean acupuncture (KA) 4=Western medical acupuncture (WMA) 5=Five Element acupuncture (FEA) 6=Scalp stimulation 7=Auricular acupuncture 8=Dry needling
35	Type of funding	1=National funding 2=Foundation funding 3=Provincial funding 4=Institutional funding 5=For-profit funding 6=Not reported
36	Type of Journal	1= CAM (Complementary and Alternative Medicine) journals 2=Non- CAM journals
37	Journal Impact factor	1=0 2=Between 0 and 1.99 3=Between 2 and 4.99 4=No less than 5
38	Course of diseases	1=Acute or perioperative issue 2=Chronic disease

39	Type of comparison	1=Acupuncture vs no intervention or waiting list 2=Acupuncture vs sham acupuncture 3=Acupuncture +other intervention vs other intervention 4=Acupuncture +other intervention vs sham acupuncture +other intervention
40	Missing data reported	1=Yes, stating missing data occur 2=No, stating missing data do not occur 3=No explicit statement
41	Proportion of missing data	1=>20% 2=<=20% 3=Not reported
42	Stratification or block of randomization	1=Only stratification randomization used 2=Only block randomization used 3=Both stratification and block randomization used 4=Not reported
43	Ever received acupuncture	1=Yes 2=No 3=Not reported
44	Duration of treatment for chronic diseases	1=1-4 weeks 2=5-8 weeks 3=9-12 weeks 4=>12 weeks
45	Duration of treatment for acute disease	1=1 day 2=>1 day
46	Longest follow-up time	1=1-3 months 2=3-6 months 3=>6 months

*When one study included both sham and other interventions as comparators, we classified the category based on the sham type.

We classified sham acupuncture into three types: penetrating needle sham, non-penetrating needle sham and non-needle sham.

eAppendix 3

eAppendix 3 Excluded independent variables from multivariable analysis

Due to missing factor data

1	Total number of acupuncture treatments
2	Acupuncture stimulation (manual acupuncture, electroacupuncture, laser acupuncture, TEAS, acupressure)
3	Source of acupuncture regimen
4	Duration of treatment_chronic
5	Duration of treatment_acute
6	Education or training of practitioners
7	Acupuncturist experience
8	Type of comparisons
9	Longest follow-up time
10	Missing data reported
11	The proportion of missing data
12	Type of funding
13	Stratification or block randomization
14	Needle retention time
15	Needling angle
16	Depth of insertion
17	Number of needles used
18	Acupuncture-specific patient-practitioner interactions
19	Ever received acupuncture
20	Location of needles
21	The clinical specialty of practitioners
22	Acupuncture manipulation after needles inserted
23	Needling direction
24	Intensity of stimulation
25	De qi
26	Patient expectations
Due to collinearity	
27	Language of publication
28	Journal impact factors
29	Trial registration
30	Therapeutic areas
31	Blinding of participants

eAppendix 4

eAppendix 4 Classification of acupuncture treatment frequency, duration and total number of treatments

Category	Low	High
Frequency of treatment sessions		
Acupressure	≤3/day	>3/day
Non-acupressure + Acute	1/day	>1/day
Non-acupressure + Chronic	≤3/week	>3/w
Duration of treatments		
Acute diseases	1 day	>1 day
Chronic diseases	≤4 weeks	>4 weeks
Total number of acupuncture treatments		
Acute + Acupressure	≤3	>3
Acute + non-acupressure	1	>1
Chronic + Acupressure	≤12	>12
Chronic + non-acupressure	≤12	>12

eAppendix 5

eAppendix 5 Independent variables included in multivariable analysis

1	Random sequence generation
2	Allocation concealment
3	Course of diseases (chronic or acute)
4	Acupuncture stimulation
5	Acupuncture regimen
6	Frequency of treatment sessions
7	Sample size
8	Number of centers
9	Type of control
10	Style of acupuncture
11	Country
12	Type of journal
13	Funding availability
14	Blinding of outcome assessors
15	Type of outcome

eTables

eTable 1.1 Basic characteristics of included studies (n=584)	
Characteristic	No. (%)
Year of publication	
2015	67 (11.5)
2016	96 (16.4)
2017	133 (22.8)
2018	127 (21.8)
2019	161 (27.6)
Regions	
Eastern regions (Asian countries) ^a	554 (94.9)
Western regions (countries in Europe, America, Australia, and Africa) ^b	29 (5.0)
Both eastern and western regions ^c	1 (0.2)
Language	
Chinese	506 (86.6)
English	76 (13.0)
Persian	2 (0.3)
Type of Journal	
Complementary and Alternative Medicine	297 (50.9)
Non-Complementary and Alternative Medicine	287 (49.1)
Journal impact factor	
0	517 (88.5)
0.1-1.99	17 (2.9)
2-4.99	37 (6.3)
>5	13 (2.2)
Funding	
Non for profit	
National	57 (9.8)
Provincial	146 (25.0)
Institutional	20 (3.4)
Foundational	5 (0.9)
For-profit	0
Not reported	356 (60.9)
Randomized sample size	
101-150	418 (71.6)
151-499	156 (26.7)
>=500	10 (1.7)
Trial registration	
Reported	57 (9.8)
Not reported	527 (90.2)
Informed consent with patients	
Reported	254 (43.5)
Not reported	330 (56.5)
Compensation for participants	
Reported	2 (0.3)
Not reported	582 (99.7)
Number of centers	

Multicenter	36 (6.2)
Single-center	546 (93.5)
Not reported	2 (0.3)
Primary analysis	
Intention to treat analysis (Modified intention to treat)	37 (6.3)
Per protocol analysis	1 (0.2)
No explicit statement	546 (93.5)
Methods dealing with missing participant data (MPD)	
Data deletion	3 (0.5)
Single imputation	9(1.5)
• Mean imputation	1 (0.2)
• Last Observation Carrying Forward	5 (0.9)
• Regression for MPD	1 (0.2)
worst-case scenarios	1 (0.2)
best- and worst-case scenarios	1 (0.2)
Multiple imputation	9 (1.5)
Mixed effect model for missing data	2 (0.3)
No missing data	27 (4.6)
No explicit statement	534 (91.4)

* Each study can contribute more than one estimate.

^a Eastern regions include China(n=540), Iran(n=11), South Korea(n=1), India(n=1) and Malaysia(n=1).

^b Western regions include USA (n=9), Spain(n=4), Australia(n=4), Brazil(n=3), German(n=2), Turkey(n=2), Denmark, France, Sweden, UK, Australia and Zealand.

^c Both eastern and western regions include one multicenter study conducted in China and the USA.

eTable 1.2 Clinical characteristics of included studies (n=584)

Characteristic	No. (%)
Therapeutic area *	
Neurology	203 (34.8)
Gastroenterology	77 (13.2)
Musculoskeletal system	58 (9.9)
Obstetrics and gynecology	54 (9.2)
Mental health	53 (9.1)
Trauma and injuries	34 (5.8)
Urology	27 (4.6)
Respirology	18 (3.1)
Sleep-wake disorders	15 (2.6)
Cardiovascular disorders	12 (2.1)
Acupuncture anesthesia	10 (1.7)
Endocrinology and nutrition	8 (1.4)
Oncology	8 (1.4)
Dermatology	4 (0.7)
Otorhinolaryngology	2 (0.3)
Ophthalmology	1 (0.2)
Pediatrics	1 (0.3)
Course of disease	
Acute (related to procedure such as surgery)	172 (29.4)
Chronic	412 (70.6)
Patient expectation	
Reported	8 (1.4)
Not reported	576 (98.6)
Ever received acupuncture	
Yes	3 (0.5)
No	5 (0.9)
Not reported	576 (98.6)
Style of acupuncture*	
Traditional Chinese acupuncture	444 (76)
Auricular acupuncture	78 (13.4)
Western medical acupuncture	24 (4.1)
Scalp acupuncture	12 (2.1)
Dry needling	2 (0.3)
Not reported	24 (4.1)
Acupuncture stimulation*	
Manual acupuncture	313 (53.6)
Acupressure	131 (22.4)
Electro-acupuncture	99 (17.0)
Transcutaneous Electrical Acupoint Stimulation (TEAS)	44 (7.5)
Laser acupuncture	1 (0.2)
Source of acupuncture regimen	
Textbook or literature	61 (10.4)
Expert consensus	9 (1.5)
Clinical experience	4 (0.7)
Mix of some	12 (2.1)
Not reported	498 (85.3)
Acupuncture regimen*	
Fixed regimen	461 (78.9)
Flexible regimen	93 (15.9)
Individualized regimen	29 (5.0)
Not reported	1 (0.2)
Location of acupuncture points*	
Local	76 (13.0)
Distal	64 (11.0)
Both local and distal	292 (50.0)
Not reported	1 (0.2)

Not applicable	154 (26.4)
Number of needles used*	
1 to 4	54 (9.2)
5 to 9	116 (19.9)
10 to 14	117 (20.0)
15 to 20	70 (12.0)
>20	38 (6.5)
Not reported	18 (3.1)
Not applicable	175 (30.0)
De qi	
Yes	265 (45.4)
No	2 (0.3)
Not reported	80 (13.7)
Not applicable	237 (40.6)
Depth of insertion*	
Deep needling (> 10mm)	153 (26.2)
Superficial needling (< 10mm)	14 (2.4)
Not reported	244 (41.8)
Not applicable	175 (30.0)
Acupuncture manipulation after needles inserted*	
Yes	267 (45.7)
No	9 (1.5)
Not reported	134 (22.9)
Not applicable	175 (30.0)
The intensity of stimulation*	
Strong stimulation	15 (2.6)
Moderate stimulation	4 (0.7)
Mild stimulation	2 (0.3)
Not reported	566 (96.9)
Needling angle*	
Reported	146 (25.0)
Not reported	264 (45.2)
Not applicable	175 (30.0)
Needling direction*	
Reported	87 (14.9)
Not reported	323 (55.3)
Not applicable	175 (30.0)
Needle retention time*	
<=20 min	116 (19.9)
> 20 min	296 (50.7)
Not reported	174 (29.8)
Not applicable	114 (19.5)
Frequency of treatment sessions^a	
Low	180 (30.8)
High	356 (61.0)
Not applicable	8 (1.4)
Not reported	43 (7.4)
Duration of treatment for chronic diseases^a (n=412)	
1-4 weeks	227 (55.1)
5-8 weeks	79 (19.2)
9-12 weeks	53 (12.9)
> 12 weeks	22 (5.3)
Not reported	31 (7.5)
Duration of treatment for acute or perioperative issues^a (n=172)	
One day	85 (49.4)
> 1day	53 (30.8)
Not reported	34 (19.8)
Total number of treatments^a	
High	356 (61.0)
Low	128 (21.9)

Not applicable	7 (1.2)
Not reported	103 (17.6)
Acupuncturist experience (years)	
<=5	22 (3.8)
5-10y	1 (0.2)
>=10y	6 (1.0)
Not reported	555 (95.0)
Education or training of the practitioner	
Systematic acupuncture or Traditional Chinese Medicine Education	37 (6.3)
Short term training	55 (9.4)
Not reported	492 (84.3)
The clinical specialty of the practitioner	
Acupuncturist	45 (7.7)
Others	65 (11.1)
Not reported	474 (81.2)
Acupuncture-specific patient-practitioner interactions	
Yes (trialists allowed or encouraged the interactions)	73 (12.5)
No (the interactions were prohibited)	43 (7.4)
Not reported	468 (80.1)
Type of control group*	
Penetrating needle sham	25 (4.3)
Non-penetrating needle sham	13 (2.2)
Non-needle sham	41 (7.0)
High-intensity control (No sham) ^b	395 (67.6)
Usual care control (No sham)	145 (24.8)
Low-intensity control (No sham) ^c	2 (0.3)
Type of comparisons*	
Acupuncture vs. waitlist or no intervention	3 (0.5)
Acupuncture vs. sham acupuncture	43 (7.4)
Acupuncture + other interventions vs. other interventions	528 (90.4)
Acupuncture + other interventions vs. sham acupuncture + other	36 (6.2)
Type of outcome*	
Pain	177 (30.3)
Non-pain symptoms	267 (45.7)
Function	314 (53.8)
Quality of life	46 (7.9)
Major events	54 (9.2)
Longest follow-up time	
1-3 months	52 (8.9)
3-6 months	18 (3.1)
>6 months	7 (1.2)
End of treatment	507 (86.8)

* Each study can contribute more than one estimate.

^a We classified the frequency of treatment sessions, duration of treatments, and the total number of treatments into high and low according to the categories of type of acupuncture stimulation and course of diseases. Details of criteria were provided in eAppendix 4.

^b In the high-intensity control group, patients received the specific protocol-guided treatment with identical aims to acupuncture treatment.

^c In the low-intensity control, some active treatments are not permitted. For example, in an RCT where acupuncture was the intervention for low back pain, patients in the waitlist control group could take oral nonsteroidal anti-inflammatory drugs but prohibited to take analgesics for central nervous systems.

eTable 1.3 Risk of bias of included studies (n=584)	
Characteristic	No. (%)
Random sequence generation	
Inadequate or unclear	246 (42.1)
Adequate	338 (57.9)
Allocation concealment	
Inadequate or unclear	536 (91.8)
Adequate	48 (8.2)
Blinding of outcome assessors	
No and probably no	521 (89.2)
Yes and probably yes	63 (10.8)
Blinding of participants*	
No and probably no	536 (91.8)
Yes and probably yes	63 (10.8)
Success of participants' blinding**	
Yes	7 (70.0)
No	3 (30.0)
Stratification or block randomization	
Only used Stratification	4 (0.7)
Only used Block randomization	14 (2.4)
Stratification and block randomization	17 (2.9)
Not reported	549 (94.0)
Missing data reported	
Yes, state MPD occurs (in the main text or CONSORT flow diagram)	100 (17.1)
Yes, state MPD did not occur (in the main text or the CONSORT flow)	27 (4.6)
Not reported	457 (78.3)
The proportion of missing data	
0%	27 (4.6)
< 20%	94 (16.1)
>20%	6 (1.0)
Not reported	457 (78.3)

* Each study can contribute more than one estimate.

** Only ten studies conducted test the success of participants' blinding

eTable 2 Magnitude of significant factors impacting treatment effect in multivariable analysis

Significant predictors	Differences of adjusted SMD	95% CI	P-value
Type of outcome			
Quality of life vs major events	0.51	0.24 to 0.77	<0.001
Pain vs major events	0.48	0.27 to 0.69	<0.001
Function vs major events	0.41	0.21 to 0.61	<0.001
Non-pain symptoms vs major events	0.32	0.12 to 0.52	<0.001
Pain vs non-pain symptoms	0.16	0.04 to 0.27	0.01
Function vs non-pain symptoms	0.09	0 to 0.19	0.06
Quality of life vs non-pain symptoms	0.19	-0.01 to 0.39	0.06
Pain vs function	0.06	-0.05 to 0.18	0.27
Quality of life vs pain	0.03	-0.18 to 0.24	0.77
Quality of life vs function	0.10	-0.10 to 0.29	0.35
Number of centers			
Single center vs multicenter	0.38	0.10 to 0.66	0.01
Acupuncture type			
Penetration vs non-penetration	0.34	0.15 to 0.53	<0.001
Frequency of treatment sessions			
High vs low	0.19	0.03 to 0.35	0.02
Funding availability			
Not reported vs reported	0.12	0 to 0.25	0.04

SMD=standardized mean difference; CI=confidence interval; Vs=versus

eTable 3 Magnitude of significant factors in univariable analyses (excluded from multivariable analysis)	
Predictors	Differences of adjusted SMD (95% CI), <i>P</i> value
Total number of acupuncture treatments	
High vs low	0.48 (0.33 to 0.62), <0.001
Type of acupuncture stimulation	
Manual acupuncture vs electro-acupuncture	0.21 (0.06 to 0.37), 0.008
Manual acupuncture vs Laser acupuncture	-0.37(-1.73 to 0.99), 0.60
Manual acupuncture vs TEAS	0.64(0.41 to 0.86), <0.001
Manual acupuncture vs acupressure	0.41(0.26 to 0.56), <0.001
Electro-acupuncture vs Laser acupuncture	-0.58 (-1.95 to 0.78), 0.40
Electro-acupuncture vs TEAS	0.42(0.17 to 0.68), 0.001
Electro-acupuncture vs acupressure	0.19(0.01 to 0.38), 0.04
Laser acupuncture vs TEAS	1.01(-0.37 to 2.38), 0.15
Laser acupuncture vs acupressure	0.78(-0.59 to 2.14), 0.26
TEAS vs acupressure	-0.23(-0.47 to 0.01), 0.06
Source of acupuncture regimen	
Expert consensus vs textbook or literature	-0.56(-0.87 to -0.26), 0.001
Expert consensus vs clinical experience	-0.21(-0.73 to 0.31), 0.42
Expert consensus vs mix of some	-0.10(-0.48 to 0.28), 0.60
Textbook or literature vs clinical experience	0.35(-0.10 to 0.80), 0.12
Textbook or literature vs mix of some	0.46(0.19 to 0.74), 0.001
Clinical experience vs mix of some	0.11(-0.39 to 0.61), 0.66
Duration of treatment_chronic	
1-4 weeks vs 5-8 weeks	0.28(0.09 to 0.48), 0.005
1-4 weeks vs 9-12 weeks	0.28(0.06 to 0.51), 0.01
1-4 weeks vs > 12 weeks	0.39(0.05 to 0.73), 0.03
5-8 weeks vs 9-12 weeks	-0.002(-0.27 to 0.26), 0.99
5-8 weeks vs > 12 weeks	0.11(-0.26 to 0.47), 0.57
9-12 weeks vs > 12 weeks	0.11(-0.28 to 0.49), 0.58
Patient expectation	
Not reported vs reported	0.79(0.33 to 1.25), <0.001

Education or training of practitioner	
Systematic acupuncture or TCM education (undergraduate, graduate, diploma training) vs short term training (none of the training mentioned in 1)	-0.22(-0.44 to -0.01), 0.04
Type of comparisons	
Acupuncture vs waitlist or no intervention vs Acupuncture vs sham acupuncture	0.04(-0.52 to 0.59), 0.90
Acupuncture vs waitlist or no intervention vs Acupuncture + other interventions vs other interventions	-0.40(-1.00 to 0.17), 0.17
Acupuncture vs waitlist or no intervention vs Acupuncture + other interventions vs sham acupuncture + other interventions	0.09(-0.51 to 0.70), 0.77
Acupuncture vs sham acupuncture vs Acupuncture + other interventions vs other interventions	-0.44(-0.63 to -0.24), <0.001
Acupuncture vs sham acupuncture vs Acupuncture + other interventions vs sham acupuncture + other interventions	0.05(-0.23 to 0.34), 0.70
Acupuncture + other interventions vs other interventions vs Acupuncture + other interventions vs sham acupuncture + other interventions	0.49(0.28 to 0.70), <0.001
Blinding of participants	
Probably no vs probably yes	0.49(0.33 to 0.65), <0.001
Therapeutic areas	
Gastroenterology vs Musculoskeletal system	-0.34(-0.59 to -0.09), 0.01
Gastroenterology vs Neurology	-0.52(-0.71 to -0.34), <0.001
Gastroenterology vs Respiriology	-0.42(-0.82 to -0.01), 0.04
Dermatology vs Endocrinology and nutrition	0.95(0.01 to 1.89), 0.05
Endocrinology and nutrition vs Musculoskeletal system	-0.63(-1.11 to -0.16), 0.01
Endocrinology and nutrition vs Neurology	-0.82(-1.23 to -0.37), <0.001
Endocrinology and nutrition vs Respiriology	-0.71(-1.28 to -0.14), 0.02
Obstetrics and gynecology vs Musculoskeletal system	-0.38(-0.73 to -0.04), 0.03
Obstetrics and gynecology vs Neurology	-0.57(-0.87 to -0.27), <0.001
Mental health vs Neurology	-0.42(-0.63 to -0.21), <0.001
Musculoskeletal system vs Oncology	0.69(0.14 to 1.23), 0.01
Musculoskeletal system vs Obstetrics and	0.40(0.13 to 0.67), 0.003

gynecology	
Musculoskeletal system vs Trauma and injuries	0.39(0.09 to 0.70), 0.01
Oncology vs Neurology	-0.87(-1.39 to -0.35), 0.001
Oncology vs Respiriology	-0.76(-1.39 to -0.13), 0.02
Neurology vs Obstetrics and gynecology	0.59(0.38 to 0.80), <0.001
Neurology vs Sleep-wake disorders	0.52(0.14 to 0.89), 0.007
Neurology vs Respiriology	0.58(0.33 to 0.84), <0.001
Respirology vs Trauma and injuries	0.47(0.03 to 0.91), 0.04
Longest follow-up time	
1-3months vs 3-6months	0.14(-0.25 to 0.53), 0.48
1-3months vs >6months	0.02(-0.51 to 0.55), 0.94
1-3months vs end of treatment	-0.41(-0.61 to -0.21), <0.001
3-6months vs >6months	-0.12(-0.71 to 0.48), 0.70
3-6months vs end of treatment	-0.55(-0.89 to -0.20), 0.002
>6months vs end of treatment	-0.43(-0.92 to 0.07), 0.09
Missing data reported	
Yes, state MPD occur (in the main text or in CONSORT flow diagram) vs Yes, state MPD did not occur (in the main text or in CONSORT flow diagram)	-0.40(-0.61 to -0.18), 0.001
Proportion of missing data	
0% vs < 20%	0.37(0.16 to 0.59), 0.001
0% vs ≥20%	0.68(0.28 to 1.08), 0.001
< 20% vs ≥20%	0.30(-0.06 to 0.67), 0.10
Trial registration	
Not reported vs reported	0.76(0.59 to 0.94), <0.001
Type of funding	
National vs foundation	0.21(-0.28 to 0.69), 0.40
National vs provincial	-0.54(-0.75 to -0.33), <0.001
National vs institution	-0.05(-0.39 to 0.28), 0.75
Foundation vs provincial	-0.75(-1.21 to -0.28), 0.002
Foundation vs institution	-0.26(-0.76 to 0.24), 0.30
Provincial vs institution	0.49(0.18 to 0.79), 0.002
Publication language	
Chinese vs English	0.72(0.57 to 0.88), <0.001
Chinese vs Persian	0.76(-0.41 to 1.92), 0.20
English vs Persian	0.03(-1.14 to 1.20), 0.96
Journal Impact factor	
0 vs. 0.1-1.99	0.6(0.29 to 0.92), 0.001
0 vs 2-4.99	0.7(0.49 to 0.91), <0.001

0 vs ≥ 5	1.02(0.67 to 1.37), <0.001
0.1-1.99 vs 2-4.99	0.1(-0.27 to 0.47), 0.60
0.1-1.99 vs ≥ 5	0.42(-0.04 to 0.88), 0.07
2-4.99 vs ≥ 5	0.32(-0.08 to 0.72), 0.12
Stratification or block randomization	
Only stratification randomization used vs. only block randomization used	-0.56(-1.36 to 0.25), 0.18
Only stratification randomization used vs. both stratification and block randomization	-0.02(-0.81 to 0.77), 0.96
Only block randomization used vs. both stratification and block randomization	0.53(0.04 to 1.02), 0.03