# Meta-Analysis of Randomized Controlled Trials of Acupuncture versus Western Medicine in the Treatment of Insomnia

QINSHI ZHANG<sup>1</sup>, XU DONG<sup>2</sup>, HONG HUO<sup>1</sup>, YIZHI CUI<sup>1</sup>, RUOYU WANG<sup>1</sup> AND DONGYAN WANG\*

The Second Affiliated Hospital of Heilongjiang University of Traditional Chinese Medicine, Harbin, Heilongjiang 150000, <sup>1</sup>Heilongjiang University of Traditional Chinese Medicine, Harbin, Heilongjiang 150040, China

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To evaluate the clinical effect and effectiveness of acupuncture therapy in the treatment of insomnia patients, so as to provide better evidence based services, benefit patients and promote it in clinical practice. Chinese databases were searched: China National Knowledge Infrastructure, Chinese Scientific Journals Full text Database, Wanfang data knowledge service platform; English databases were searched: PubMed, Cochrane Library, Embase. Stata 15.1 and RevMan 5.4.1 software were used for statistical analysis. A total of 22 randomized controlled trials (1572 cases) were included, including 780 in the experimental group and 792 in the control group. An analysis showed that the effective rate of acupuncture treatment for insomnia was better than that of Western medicine treatment and the combined effect odds ratio=1.23, 95 % confidence interval [1.17, 1.29]. Pure acupuncture group in Pittsburgh sleep quality experienced surpasses the Western medicine group evaluation combined effect of weighted mean difference=2.04, 95 % confidence interval [1.62, 2.46], p<0.01; In each score of Pittsburgh sleep quality index, sleep quality weighted mean difference=-0.27, 95 % confidence interval [-0.40, -0.13], p<0.01, time to fall asleep weighted mean difference=-0.21, 95 % confidence interval [-0.37, -0.06], p<0.01, sleep efficiency weighted mean difference=-0.30, 95 % confidence interval [-0.42, -0.19], p<0.01, sleep disorder weighted mean difference=-0.22, 95 % confidence interval [-0.41, -0.04], p<0.01, hypnotic drugs weighted mean difference=-0.79, 95 % confidence interval [-1.01, -0.57], p<0.01, daytime function weighted mean difference=-0.39, 95 % CI [-0.59, -0.19], p<0.01. All of the acupuncture groups were better than the Western medicine groups. In the sleep time weighted mean difference=-0.30, 95 % confidence interval [-0.05, 0.18], p=0.73, there was no statistical significance between the acupuncture group and the Western medicine group. Pure acupuncture has more advantages than Western medicine in the treatment of insomnia and it is suitable for clinical promotion.

#### Key words: Acupuncture, insomnia, systematic evaluation, meta-analysis

Insomnia is a disease characterized by frequent failure to get normal sleep. It is clinically manifested as having difficulty in falling asleep, sleeping lightly, being unable to fall asleep after waking up, having a broken sleep and so on, and being sleepless all night in severe cases. Sleep deprivation may also affect the cognitive, emotional and other functions, with such symptoms as dizziness, headache, fatigue, memory loss and emotional instability. In addition, negative emotions such as anxiety and depression, climacteric syndrome and other conditions can also result in insomnia. According to the Traditional Chinese Medicine (TCM), insomnia occurs when a pathogen invades Zang-fu organs, causing defensive qi flow on the exterior instead of entering the interior. Despite a certain effect in the treatment of insomnia, the Western medicine used is mainly sedative drugs, most of which have adverse reactions such as addiction and withdrawal syndrome<sup>[1]</sup>, and their discontinuation may easily lead to a rebound or even aggravation of symptoms. Compared with Western medicine, acupuncture is easier to operate in the treatment of sleep-related diseases, and has such advantages as significant curative effect, few adverse reactions and high safety, which thus is suitable for clinical promotion and application<sup>[2]</sup>. However, the author has not found the Meta-analysis of acupuncture vs. Western medicine in the treatment of insomnia in domestic and foreign literature. Therefore, metaanalysis was used in this paper to study the difference of effective rate and Pittsburgh Sleep Quality Index (PSQI) between acupuncture and Western medicine in the treatment of insomnia, so as to provide evidencebased medicine for this issue and promote more high quality randomized controlled trials in China and foreign countries.

## MATERIALS AND METHODS

## Inclusion criteria:

**Study type:** All Randomized Controlled Trials (RCTs) where acupuncture therapy was used for the treatment of insomnia were performed according to the randomized control requirements and the languages were Chinese and English.

**Subjects:** Subjects should meet the diagnostic criteria of Chinese and Western medicine for insomnia, have no serious organic diseases, and be in all gender and age groups and in any course of disease.

**Interventions:** The experimental group was treated with acupuncture; the control group was treated with Western medicine. The acupuncture treatment included routine acupuncture, electroacupuncture, eye acupuncture and *so on*. Patients were treated in any course.

Outcome indicators: Effective rate; PSQI.

## **Exclusion criteria:**

Non-randomized controlled trial; Multiple therapies were combined in the treatment groups; The control group was not treated with Western medicine alone; There was only abstract and the full text could not be extracted; The experimental design and outcome indicators were not met; The treatments and procedures were not clear; The scale evaluation was improper or the data were unclear and could not be extracted.

## Search strategy:

English databases, including PubMed, Cochrane Library and Embase and Chinese databases, including China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Full-Text Database (CQVIP) and Wanfang Data Knowledge Service Platform (WangFang Data), were searched by computer. The search followed the Patient, Intervention, Comparison And Outcomes (PICOS) principle; the research time was from the establishment of the database to March 2021. To avoid omissions, references of the included literature were viewed manually.

## Literature selection:

First, literature to be searched was merged and deduplicated using NoteExpress. Then, two evaluators independently read the title and abstract, and read the full text, extracted the data and evaluated the quality after including the preliminarily selected literature. The two evaluators crosschecked their results. In case of any discrepancy, the two evaluators could discuss and decide after carefully reading the full text and if necessary, a third evaluator could assist in the decision.

## Data extraction:

The extracted data included author's name and publication time of literature, research methods, information of included sample (age, gender and course of disease of patients), intervention plan and methods (therapy and acupoint selection), outcome indicators and other contents.

## Literature quality evaluation:

The risk of bias of the included literature was evaluated by the bias risk evaluation manual recommended Cochrane collaboration, including-Selection bv bias: Random sequence generation and allocation concealment; Performance bias: Blinding of participants and personnel; Detection bias: Blinding of outcome assessment; Follow-up bias: Integrity of outcome data; Reporting bias: Selective reporting; other bias. Two evaluators evaluated each article of literature one by one and made the decisions of "yes" (low risk of bias), "no" (high risk of bias) and "unclear" (lack of information or uncertainty about the bias). Finally, the two evaluators crosschecked their results, and in case of any discrepancy, they could decide through discussion or seek the assistance of a third evaluator. If all the above items are of low risk, the risk of bias is low, representing the low risk of bias; if more than two (not including two) items are not described or the subjects cannot be contacted, the risk of bias is unclear, representing unclear risk of bias; if one or more items are of high risk, the risk of bias is high, representing high risk of bias. The funnel plot was used to evaluate the publication bias of the included literature.

## Statistical methods:

Stata 15.1 and RevMan 5.4.1 software provided by Cochrane library were used for analysis. According to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) principle, the included literature data were analyzed for heterogeneity (I<sup>2</sup>), where I<sup>2</sup> $\leq$ 50 % suggested that there was no obvious heterogeneity among the studies and fixed effect model was used for analysis; I<sup>2</sup>>50 % suggested that there was heterogeneity among the studies, and random effect model was used, and sensitivity analysis or subgroup analysis was performed for the source of heterogeneity. The included binary variables were expressed by Odds Ratio (OR) as the effect magnitude and 95 % Confidence Interval (CI); the included continuous variables were expressed by Weighted Mean Difference (WMD) as the effect magnitude and 95 % CI. If enough literature was included for the outcome indicators, funnel plots were made to analyze the publication bias. If the study was further conducted, Begg's and Egger's tests were conducted to further detect the publication bias.

#### Literature selection results:

A total of 2572 articles of literature were preliminarily included, including 576 English articles and 1996 Chinese articles. Then, 734 articles were removed after duplicate checking, 1731 articles were removed after reading titles and abstracts, and 85 articles were removed after further reading the full text. Finally, 22 articles of randomized controlled trials were included for meta-analysis. Results are shown in fig. 1.

#### **Characteristics of included literature:**

A total of 22 articles of literature were included<sup>[3,4]</sup>, including 7 thesis<sup>[3-10]</sup>, 14 periodical articles<sup>[11,24]</sup> and 1 conference article<sup>[9]</sup>. All the articles were about randomized controlled trials. The experimental group was treated with acupuncture and the control group was treated with Western medicine. Patients were in any age and gender group and any course of disease. A total of 1572 patients were included, with 780 patients in the experimental group and 792 patients in the control group. Effective rate was selected as the outcome indicator in 21 articles<sup>[3-24]</sup>, Pittsburgh Sleep Quality Index (PSQI) in 22 articles<sup>[4-24]</sup>, Chinese medicine symptom complex score in 2 articles<sup>[5-10]</sup> and adverse reaction in 2 articles<sup>[6,10]</sup>. Details are shown in Table 1 and Table 2.



Fig. 1: Flow diagram of the literature selection process

#### **TABLE 1: TABLE OF LITERATURE CHARACTERISTICS**

Included study	Sample size (male/ female)		Age (x±s, year)		Baseline comparability	Insomnia type	Insomnia course (x <sup>-</sup> ±s)		Outcome indicator
	т	С	т	С			т	С	
Ren et al. <sup>[23]</sup>	30 (11/19)	29 (11/18)	56.8±9.14	56.2±8.69	Comparable	Insomnia with heart-spleen deficiency	(52.1±11.2) d	(54.5±12.1) d	12
Liu <i>et al</i> . <sup>[14]</sup>	45 (23/22)	45 (21/24)	36.74±9.31	35.66±8.99	Comparable	Insomnia with heart-spleen deficiency	(25.3±7.6) m	(25.9±10.3) m	12
Liu <i>et al</i> . <sup>[15]</sup>	96	95	21-70	23-68	Comparable	Insomnia	(3-32) m	(4-34) m	12
Wu <i>et al</i> . <sup>[10]</sup>	27 (11/16)	27 (12/15)	42.26±13.39	39.15±13.09	Comparable	Insomnia	(8.37±5.34) y	(7.30±4.94) y	12712
Zhou <i>et al</i> . <sup>[16]</sup>	30 (12/18)	30 (14/16)	49.1±16.7	48.7±15.4	Comparable	Insomnia with heart-kidney imbalance	(14.0±10.5) m	(14.1±10.4) m	12
Zhou <i>et al.</i> <sup>[6]</sup>	37 (9/28)	36 (17/29)	19-72; Mean: 40.81	Comparable	Primary insomnia	2 n	n-18 y; Mean: 4.5	52 y	12612
Zhang <i>et al</i> .[11]	30 (16/14)	30 (19/11)	35.1±12.9	37.4±14.5	Comparable	Insomnia	(13.3±6.7) m	(10.5±5.1) m	12
Xu <i>et al.</i> <sup>[13]</sup>	45 (17/28)	45 (15/30)	49.11±3.62	49.50±4.01	Comparable	Insomnia	(4.83±3.79) m	(4.40±3.01) m	121
Li <i>et al</i> . <sup>[9]</sup>	30 (16/14)	30 (12/18)	44.80±11.12	43.67±10.72	Comparable	Insomnia	(4.60±1.61) m	(4.38±1.40) m	1291
Li et al. <sup>[3]</sup>	30 (11/20)	30 (12/18)	59.50±8.11	58.20±7.83	Comparable	Middle and elderly aged insomnia	(9.52±4.66) y	(8.93±4.73) y	128
Li <i>et al</i> . <sup>[17]</sup>	64 (20/44)	64 (21/43)	51.0±12.5	45.1±12.4	Comparable	Chronic insomnia	(18.6±1.33) m	(19.1±1.28) m	12
Yang <i>et al</i> .[4]	31	31	50.45±3.50	48.97±2.88	Comparable	Perimenopausal insomnia	≥3	0 d	1245
Yin <i>et al.</i> <sup>[7]</sup>	30 (13/17)	30 (11/19)	43.43±13.52	46.80±12.95	Comparable	Insomnia	(19.87±7.21) m	(19.9.±6.70) m	12
Tang et al. <sup>[24]</sup>	34 (18/16)	31 (17/14)	58.25±9.31	59.68±8.73	Comparable	Insomnia after stroke	(28.64±10.36) d	(30.18±8.55) d	12
Wang et al. <sup>[20]</sup>	33 (14/19)	30 (12/18)	73±6	73±6	Comparable	Senile insomnia	(15.0±7.1) m	(15.1±7.3) m	12
Wang et al. <sup>[8]</sup>	30 (13/17)	30 (12/18)	44.67±8.36	45.13±9.82	Comparable	Simple insomnia	9.3±4.80	9.5±4.41	12
Bai <i>et al</i> . <sup>[21]</sup>	30 (13/17)	30 (14/16)	38.36±13.52	39.23±13.14	Comparable	Insomnia	(46.89±16.32) d	(43.35±15.94) d	12
Su <i>et al.</i> <sup>[5]</sup>	30 (20/10)	30 (18/12)	18-60	Comparable	Insomnia with deficiency syndrome		1 m-20 y		127
Xie <i>et al</i> . <sup>[18]</sup>	43 (22/21)	40 (21/19)	56.94±9.83	58.15±12.20	Comparable	Insomnia after stroke	(34.93±13.41) d	(37.57±14.92) d	12
Zhou et al. <sup>[19]</sup>	30 (19/11)	30 (17/13)	54.32±6.09	54.15±6.26	Comparable	Insomnia	(57.90±9.37) d	(57.74±9.51) d	12
Zhou <i>et al</i> . <sup>[12]</sup>	23 (13/10)	23 (12/11)	38.2±3.9	37.3±3.5	Comparable	Insomnia	(29.1±5.5) m	(28.6±5.1) m	12
Hao <i>et al</i> . <sup>[22]</sup>	27 (13/14)	27 (12/15)	57.7±8.25	58.02±7.96	Comparable	Insomnia after stroke	(8.68±3.05) d	(8.97±2.83) d	123

Note: ① Effective rate; ② Pittsburgh Sleep Quality Index (PSQI); ③ Rheology test; ④ Hamilton Anxiety Scale (HAMA); ⑤ Hamilton Depression Scale (HAMD); ⑥ Compliance evaluation; ⑦ Chinese medicine symptom complex score; ⑧ Evaluation of Mattress Sleep Monitoring System; ⑨ SPIEGEL Scale Score; ⑪ Athens Insomnia Scale (AIS); ⑪ Self-Rating Scale of Sleep (SRSS); ⑫ Treatment Emergent Symptom Scale (TESS)

## **TABLE 2: TABLE OF LITERATURE CHARACTERISTICS**

Included study	Therapy (experimental)	Acupoint (experimental)	Therapy (control)	Course of treatment
Ren <i>et al</i> . <sup>[23]</sup>	Acupuncture for nourishing spleen and heart	Zusanli, Pishu, Shenmen, Sanyinjiao, Xinshu, Neiguan	Eszopiclone 1-3 mg/d	4 w
Liu et al. <sup>[14]</sup>	Electroacupuncture	Taiyang, Sishencong, Zusanli, Sanyinjiao	Diazepam 5 mg/d	10 d
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Liu <i>et al</i> . <sup>[15]</sup>	Acupuncture from 3 pm to	Sishencong, Anmian, Shenmen,	Estazolam 1 mg/d	24 d
	7 pm	Sanyinjiao, Taixi Dingshen-Needle, Depression Three-	-	
Wu <i>et al</i> . <sup>[10]</sup>	Jin tri-points	Needle (Sishen-Needle, Neiguan, Sanyinjiao)	Surazepam 1-2 mg/d	4 w
Zhou <i>et al</i> . [16]	Acupuncture for regulating mentality and supplementing kidney	Shangxing, Yintang, Baihui, Sishencong, Neiguan and Shenmen, Sanyinjiao, Taixi	Estazolam 1 mg/d	4 w
Zhou <i>et al</i> . <sup>[6]</sup>	Scalp seven needles combined with primary collaterals and acupoints	Baihui, Sishencong, Anmian	Alprazolam 0.4 mg/d	4 w
Zhang <i>et al</i> .[11]	Routine acupuncture	Feishu, Pishu, Ganshu, Xinshu, Shenshu	Stilnox 10 mg/d	4 w
Xu <i>et al.</i> <sup>[13]</sup>	Eye acupuncture intraorbital method	Upper jiao, Hepatic region, Splenic region, Renal region, Middle jiao	Eszopiclone 1 mg/d	2 w
Li et al. <sup>[9]</sup>	Routine acupuncture	Baihui, Neiguan, Shenmen, Sishencong	Estazolam 1 mg/d	4 w
Li et al. <sup>[3]</sup>	Routine acupuncture	Shenmen, Baihui, Sishencong, Fengchi, Anmian	Estazolam 1 mg/d	4 w
Li <i>et al</i> . <sup>[17]</sup>	Routine acupuncture	Shenmen, Neiguan, Sanyinjiao	Oxazepam 7.5-15 mg/d	4 w
Yang <i>et al</i> . <sup>[4]</sup>	Routine acupuncture	Anmian, Geshu, Taichong, Ganshu (bilateral), Baihui, Sishencong	Estazolam 0.5-1 mg/d	4 w
Yin <i>et al</i> . <sup>[7]</sup>	Routine acupuncture	Neiguan, Waiguan, Shenmen, Sanyinjiao	Estazolam 1 mg/d	4 w
Tang et al. <sup>[24]</sup>	Routine acupuncture	Shenting, Benshen, Shenmen	Estazolam 2 mg/d	4 w
Wang et al. <sup>[20]</sup>	Routine acupuncture	Shenmen, Sanyinjiao, Anmian, Baihui, Sishencong	Surazepam 1 mg/d; Oryzanol 20 mg/tid	4 w
Wang <i>et al</i> . <sup>[8]</sup>	Tongyuan therapy	Wuzangshu, Baihui, Yintang, Tianshu, Guanyuan, Qihai	Estazolam 1mg/d	4 w
Bai <i>et al</i> . <sup>[21]</sup>	Electroacupuncture	Shenmai, Zhaohai, Fuyang, Pucan, Jiaoxin, Rangu, Qingming	Estazolam 1 mg/d	4 w
Su <i>et al</i> . <sup>[5]</sup>	Routine acupuncture	Shenmen, Zhizheng, Taibai, Fenglong	Estazolam 2 mg/d	4 w
Xie <i>et al</i> . <sup>[18]</sup>	Routine acupuncture	Sanyinjiao, Shenmen, Sishencong, Shenting and the auricular point Shenmen	Estazolam 2 mg/d	4 w
Zhou <i>et al</i> . <sup>[19]</sup>	Point opening according to midnight-noon ebb-flow	Sishencong, Baihui	Zopiclone 7.5 mg/d	4 w
Zhou <i>et al</i> . <sup>[12]</sup>	Routine acupuncture	Anmian, Sishencong, Shenmen, Sanyinjiao, Zhongwan	The dose of the routine Western medicine An Mian increased gradually	30 d
Hao <i>et al</i> . <sup>[22]</sup>	Acupoint matching with specimen	Zusanli, Guanyuan, Hegu, Baihui	Estazolam 0.5-1 mg/d	4 w

### Quality evaluation of included literature:

All the 22 articles of literature included were randomized using random number table; baseline information was reported in the 22 articles of literature and all factors were comparable; allocation concealment was mentioned in 3 articles<sup>[4-6]</sup>, suggesting that sealed envelopes were used to conceal the allocation; blinding was used in 3 articles<sup>[4,6,22]</sup> and no double blind was used in them; no intentional analysis was used in all the included articles of literature; there was no selective reporting in all the included articles of literature; no other bias was mentioned in all the included articles of literature. RevMan 5.4 software provided by Cochrane was used and the specific bias evaluation analysis and percentage are shown in fig. 2 and fig. 3.



Fig. 2: Analysis of risk of bias of the included study

# Meta-analysis of acupuncture vs. Western medicine in the treatment of insomnia:

Effective rate: In the 22 articles of literature included, effective rate was used as the outcome indicator in 22 articles; heterogeneity test showed that  $I^2=43.2$  % ( $I^2\leq50$ %), suggesting that there was no obvious heterogeneity among the studies and the fixed effect model was used for analysis. The pooled effect sizes were OR=1.23, 95 % CI [1.17, 1.29] and p<0.01. 0.01<p<0.05 suggested that there was significant difference, or the clinical effective rate of acupuncture vs. Western medicine in the treatment of insomnia had high statistical significance. The analysis results (fig. 4) suggested that the effective rate of acupuncture in the treatment of insomnia was better than that of Western medicine. The funnel plot (fig. 5) showed that the sample results were asymmetrically distributed around the population effect, suggesting that there was large bias. At the same time, Begg's and Egger's tests were conducted and the results were p=0.002/p=0.005, suggesting that there was publication bias. Then, the effect of publication bias on the results was further discussed (characteristic of this bias detection method: Indicators with less than 7 included studies were not tested) by trim and filling method and the low effect suggested that the results had good authenticity.

PSQI score: In all the 22 articles of literature included<sup>[3-24]</sup>, PSQI score was used as the outcome indicators. A total of 1572 cases were included, with 780 cases in the experimental group and 792 cases in the control group. Heterogeneity test showed that  $I^2=67.7$  % ( $I^2>50$  %), suggesting that there was heterogeneity and random effect model was used, and sensitivity analysis or subgroup analysis was performed for the source of heterogeneity. The pooled effect sizes were WMD=2.04, 95 % CI [1.62, 2.46] and  $p \rightarrow 0$ , and p<0.01 suggested highly significant difference. The analysis results (fig. 6) suggested that the PSQI score of acupuncture in the treatment of insomnia was better than that of Western medicine. Begg's and Egger's tests were conducted and the results showed that p=0.481/ p=0.084, suggesting that there was small bias.



Fig. 3: Conclusion of risk of bias of the included study



Fig. 4: Forest plot of effective rate of acupuncture vs. Western medicine in the treatment of insomnia



Fig. 5: Funnel plot of effective rate of acupuncture vs. Western medicine in the treatment of insomnia



Fig. 6: Forest plot of total PSQI score of acupuncture vs. Western medicine in the treatment of insomnia

Sleep quality was recorded in 11 articles of literature<sup>[3-16,21,23]</sup> and the results showed that the sleep quality of acupuncture in the treatment of insomnia was better than that of Western medicine. Heterogeneity test showed that I<sup>2</sup>=58 %, suggesting that the heterogeneity was high; sensitivity analysis was conducted and the results showed that high heterogeneity did not affect the stability of conclusion. Begg's and Egger's tests were conducted and the results were p=0.102 and p=0.773, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.27, 95 % CI [-0.40, -0.13] and p<0.01.

Time to fall asleep was recorded in 11 articles of literature<sup>[3-19,21,23]</sup> and the results showed that the time to fall asleep of acupuncture in the treatment of insomnia was better than that of Western medicine. Heterogeneity test showed that I<sup>2</sup>=74 %, suggesting that the heterogeneity was high; sensitivity analysis was conducted and the results showed that high heterogeneity did not affect the stability of conclusion. Begg's and Egger's tests were conducted and the results were p=1.000/p=0.740, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.21, 95 % CI [-0.37, -0.06] and p<0.01.

Sleeping time was recorded in 12 articles of literature<sup>[3-19,21,23]</sup> and the forest plot showed that the sleeping time results of acupuncture *vs*. Western medicine in the treatment of insomnia were ineffective. Heterogeneity test showed that  $I^2=85$  %, suggesting that the heterogeneity was high; sensitivity analysis was conducted and the results showed that the sensitivity was high and the conclusion was instable. The confidence interval of the results obtained after removing Liu *et al.* passed through the invalid line, so the results obtained were instable. Begg's and Egger's tests were conducted and the results were p=0.493/p=0.447, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.30, 95 % CI [-0.05, 0.18] and p=0.73.

Sleep efficiency was recorded in 10 articles of literature<sup>[3-16,21,23]</sup> and the results showed that the sleep efficiency of acupuncture in the treatment of insomnia

was better than that of Western medicine. Heterogeneity test showed that  $I^2=30$  %, suggesting that there was no obvious heterogeneity among the studies. Begg's and Egger's tests were conducted and the results were p=0.788/p=0.683, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.30, 95 % CI [-0.42, -0.19] and p<0.01.

Sleeping disorders were recorded in 10 articles of literature<sup>[3-16,21,23]</sup> and the results showed that the sleeping disorders of acupuncture in the treatment of insomnia were lower than those of Western medicine. Heterogeneity test showed that I<sup>2</sup>=83 %, suggesting that the heterogeneity was high; sensitivity analysis was conducted and the results showed that high heterogeneity did not affect the stability of conclusion. Begg's and Egger's tests were conducted and the results were p=0.421/p=0.107, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.22, 95 % CI [-0.41, -0.04] and p<0.01.

Hypnotics were recorded in 4 articles of literature<sup>[6,8,11,21]</sup> and the results showed that the hypnotics of acupuncture in the treatment of insomnia were better than those of Western medicine. Heterogeneity test showed that  $I^2=24$  %, suggesting that there was no obvious heterogeneity among the studies. Begg's and Egger's tests were conducted and the results were p=1.000/p=0.594, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.79, 95 % CI [-1.01, -0.57] and p<0.01.

Daytime function was recorded in 11 articles of literature<sup>[3-16,21,23]</sup> and the results showed that the daytime function of acupuncture in the treatment of insomnia was better than that of Western medicine. Heterogeneity test showed that I<sup>2</sup>=79 %, suggesting that the heterogeneity was high; sensitivity analysis was conducted and the results showed that high heterogeneity did not affect the stability of conclusion. Begg's and Egger's tests were conducted and the results were p=0.815/p=0.484, suggesting that there was no obvious publication bias. The pooled effect sizes were WMD=-0.39, 95 % CI [-0.59, -0.19] and p<0.01. Details are shown in fig. 7.

<b>2.1.1 Sleep quality</b> Bai WJ 2011 Liu F 2015 Liu JY 2013 Li XY 2008	Mean S	D Total		control SD	Total	Weight	Mean Difference IV, Random, 95% Cl	Mean Difference IV. Random, 95% Cl
Liu F 2015 Liu JY 2013	1.23 0.6	1 30	1.68	0.88	30	1.3%	-0.45 [-0.83, -0.07]	
	1.28 0.6	4 96	1.78	0.85	95	1.7%	-0.50 [-0.71, -0.29]	
11/07/2000	1.28 0.6	5 45	1.01	0.73	45	1.5%	0.27 [-0.02, 0.56]	
LI A I 2000	1.37 0.8	1 30	1.46	0.54	30	1.4%	-0.09 [-0.44, 0.26]	
Ren S 2017	0.77 0	.5 30	1.03	0.41	29	1.7%	-0.26 [-0.49, -0.03]	
Nang YY 2015	1.47 0.50	7 30	1.6	0.498	30	1.6%	-0.13 [-0.38, 0.12]	
Yang WF 2017	1.16 0.5	2 31	1.47	0.57	30	1.6%	-0.31 [-0.58, -0.04]	
r'in Y 2018	1.27 0.9	1 30	1.8	0.89	30	1.1%	-0.53 [-0.99, -0.07]	
Zhang ZQ 2011	0.91 0.4	7 30	1.17	0.53	30	1.6%	-0.26 [-0.51, -0.01]	
Zhou B 2018	1.46 0.5	7 30	1.87	0.65	30	1.5%	-0.41 [-0.72, -0.10]	
Zhou JC 2013	1.029 0.85	7 35	1.429	0.948	35	1.2%	-0.40 [-0.82, 0.02]	
Subtotal (95% CI)		417			414	16.1%	-0.27 [-0.40, -0.13]	•
Heterogeneity: Tau² = 0 Fest for overall effect: Z		3.72, df =	10 (P =	0.008);				
2.1.2 Time to fall aslee	р							
3ai WJ 2011	1.51 0.7		1.94	0.89	30	1.2%	-0.43 [-0.84, -0.02]	
iu F 2015.	1.16 0.9	8 96	1.49	0.72	95	1.6%	-0.33 [-0.57, -0.09]	
_iu JY 2013	0.91 0.5	7 45	1.7	0.72	45	1.6%	-0.79 [-1.06, -0.52]	
Li XY 2008	1.6 0.6	7 30	1.72	0.95	30	1.2%	-0.12 [-0.54, 0.30]	
Ren S 2017	0.77 0	9 30	0.67	0.84	29	1.1%	0.10 [-0.34, 0.54]	<del></del> _
Vang YY 2015	1.4 0.19	8 30	1.63	0.498	30	1.8%	-0.23 [-0.42, -0.04]	
′ang WF 2017	1.32 0.7	9 31	0.89	0.68	30	1.3%	0.43 [0.06, 0.80]	
'in Y 2018	1.3 0.7	5 30	1.43	0.57	30	1.4%	-0.13 [-0.47, 0.21]	
Zhang ZQ 2011	1.15 0.4	9 30	1.11	0.72	30	1.5%	0.04 [-0.27, 0.35]	
(hou B 2018	1.12 0.4	5 30	1.32	0.72	30	1.5%	-0.20 [-0.50, 0.10]	
	0.829 0.78	5 35	1.457	0.919	35	1.2%	-0.63 [-1.03, -0.23]	—— I
(hou T 2020	0.63 0.1		0.79	0.2	30	1.9%	-0.16 [-0.25, -0.07]	
Subtotal (95% CI)		447			444	17.4%	0.21[-0.37, 0.06]	◆
Heterogeneity: Tau² = 0 Test for overall effect: Z			11 (P <	0.0001)	; I² = 74	%		
.1.3 sleeping time	2.10 (1 - 0	.000)						
Bai WJ 2011	1.59 0.7	9 30	2.06	0.95	30	1.1%	-0.47 [-0.91, -0.03]	———
.iu F 2015	1.59 0.7	3 96	1.89	0.8	95	1.7%	-0.30 [-0.52, -0.08]	
iu JY 2013.	1.25 0.5		1.19	0.6	45	1.6%	0.06 [-0.18, 0.30]	+-
.i XY 2008	1.9 0.5		1.21	0.53	30	1.6%	0.69 [0.42, 0.96]	
Ren S 2017	1.07 0.8		1.23	0.73	29	1.2%	-0.16 [-0.57, 0.25]	-+-
Vang YY 2015	1.43 0.56		1.8	0.664	30	1.5%	-0.37 [-0.68, -0.06]	——–
/ang WF 2017	1.26 0.8		1	0.53	30	1.4%	0.26 [-0.09, 0.61]	+
'in Y 2018	1.5 0.5	1 30	1.77	0.77	30	1.4%	-0.27 [-0.60, 0.06]	
rhang ZQ 2011	1.19 0.1		1.36	0.34	30	1.9%	-0.17 [-0.30, -0.04]	
(hou B 2018	1.53 0.5	2 30	1.76	0.66	30	1.5%	-0.23 [-0.53, 0.07]	
	0.971 0.383		1.371	0.942	35	1.4%	-0.40 [-0.74, -0.06]	
Chou T 2020	5.95 1.2		4.76	0.96	30	0.9%	1.19 [0.64, 1.74]	
Subtotal (95% CI)		447			444	17.2%	-0.04 [-0.25, 0.18]	+
Heterogeneity: Tau² = 0 Test for overall effect: Z			11 (P <	0.0000	1); I² = 8		. , .	
2.1.4 Sleep efficiency	0.04 () - 0							
Bai WJ 2011	1.39 0.7	8 30	1.83	0.87	30	1.2%	-0.44 [-0.86, -0.02]	
_iu F 2015	1.09 0.5		1.67	1.02	95	1.7%	-0.58 [-0.82, -0.34]	
Li XY 2008	1.83 0.5		1.9	0.46	30	1.6%	-0.07 [-0.34, 0.20]	-+
Ren S 2017	0.73 0.9		0.97	0.85	29	1.1%	-0.24 [-0.70, 0.22]	
Wang YY 2015	1.13 0.57		1.43	0.568	30	1.5%	-0.30 [-0.59, -0.01]	
Yang WF 2017	0.97 0.4		1.2	0.41	30	1.7%	-0.23 [-0.44, -0.02]	
Yin Y 2018	1.2 0.7	1 30	1.27	0.64	30	1.4%	-0.07 [-0.41, 0.27]	
Zhang ZQ 2011	0.81 0.4		1.29	0.57	30	1.6%	-0.48 [-0.74, -0.22]	
Zhou B 2018	1.49 0.5	5 30	1.74	0.78	30	1.4%	-0.25 [-0.59, 0.09]	
Zhou JC 2013	1 0.87		1.286	1.152	35	1.1%	-0.29 [-0.77, 0.19]	
Subtotal (95% Cl) Heterogeneity: Tau² = 0	1.01: Chi≅ = 1	372 284 df=	97P = 0	17): 17-	369	14.2%	-0.30 [-0.42, -0.19]	•
			5(1 - 0	,,,				
Fest for overall effect: Z	0.10 (1 . 0	.00001)						
2.1.5 Sleep disorders			0.00	0.00			0.451.000 0.07	
2.1.5 Sleep disorders Bai WJ 2011	1.57 0.7	2 30	2.02	0.96	30	1.2%	-0.45 [-0.88, -0.02]	
Test for overall effect: Z 2.1.5 Sleep disorders Bai WJ 2011 Liu F 2015	1.57 0.7 1.19 0.5	2 30 2 96	1.57	0.68	95	1.8%	-0.38 [-0.55, -0.21]	
2 <b>.1.5 Sleep disorders</b> Bai WJ 2011 Liu F 2015 Li XY 2008	1.57 0.7 1.19 0.5 1.17 0.3	2 30 2 96 8 30	1.57 1.68	0.68 0.61	95 30	1.8% 1.6%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25]	
2 <b>.1.5 Sleep disorders</b> Bai WJ 2011 Liu F 2015 Li XY 2008 Ren S 2017	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1	2 30 2 96 8 30 8 30	1.57 1.68 0.97	0.68 0.61 0.18	95 30 29	1.8% 1.6% 1.9%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15]	 
2.1.5 Sleep disorders Bai WJ 2011 Liu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47	2 30 2 96 8 30 8 30 9 30	1.57 1.68 0.97 1.7	0.68 0.61 0.18 0.596	95 30 29 30	1.8% 1.6% 1.9% 1.6%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10]	 
2.1.5 Sleep disorders Sai WU 2011 Liu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015 Yang WF 2017	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47 1.52 0.5	2 30 2 96 8 30 8 30 9 30 7 31	1.57 1.68 0.97 1.7 1.23	0.68 0.61 0.18 0.596 0.68	95 30 29 30 30	1.8% 1.6% 1.9% 1.6% 1.5%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61]	
2.1.5 Sleep disorders Bai WJ 2011 Liu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015 Yang WF 2015 Yang WF 2017 Yin Y 2018	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47 1.52 0.5 1.13 0.4	2 30 2 96 8 30 8 30 9 30 7 31 3 30	1.67 1.68 0.97 1.7 1.23 1.5	0.68 0.61 0.18 0.596 0.68 0.63	95 30 29 30 30 30	1.8% 1.6% 1.9% 1.6% 1.5% 1.6%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10]	
2.1.5 Sleep disorders 3ai WJ 2011 Liu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015 Yang YY 2015 Yin Y 2018 Zhang ZQ 2011	1.57         0.7           1.19         0.5           1.17         0.3           1.03         0.1           1.33         0.47           1.52         0.5           1.13         0.44           1.14         0.44	2 30 2 96 8 30 8 30 9 30 7 31 3 30 2 30	1.57 1.68 0.97 1.7 1.23 1.5 1.09	0.68 0.61 0.18 0.596 0.68 0.63 0.66	95 30 29 30 30 30 30	1.8% 1.6% 1.6% 1.6% 1.5% 1.6%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35]	
2.1.5 Sleep disorders Bai WJ 2011 Liu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015 Yang WF 2017 Yin Y 2018 Zhang ZQ 2011 Zhou B 2018	1.57         0.7           1.19         0.5           1.17         0.3           1.03         0.1           1.33         0.47           1.13         0.4           1.13         0.4           1.14         0.4           1.15         0.5           1.16         0.4           1.16         0.4	2 30 2 96 8 30 8 30 9 30 7 31 3 30 2 30 7 30	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81	95 30 29 30 30 30 30 30 30	1.8% 1.6% 1.9% 1.6% 1.5% 1.6% 1.5% 1.3%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18]	
2.1.5 Sieep disorders Sal WJ 2011 U F 2015 XY 2008 Ren S 2017 Wang VY 2015 /ang WF 2017 /in Y 2018 Zhang ZG 2011 Zhou B 2018 Zhou B 2013	1.57         0.7           1.19         0.5           1.17         0.3           1.03         0.1           1.33         0.47           1.52         0.5           1.13         0.44           1.14         0.44	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35	1.57 1.68 0.97 1.7 1.23 1.5 1.09	0.68 0.61 0.18 0.596 0.68 0.63 0.66	95 30 29 30 30 30 30 30 30 30	1.8% 1.6% 1.6% 1.5% 1.6% 1.5% 1.3% 1.3%	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07]	
1.1.5 Sleep disorders           Jai VKJ 2011           Ju F 2015           JXY 2008           Yen S 2017           Yang YY 2015           Yang YY 2017           Yang YY 2018           Chaug Zo 2011           Chou B 2018           You 2014           You 2015           You 2016           You 2017           You 2018           You 2018           You 2018	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47 1.52 0.5 1.13 0.4 1.16 0.4 1.16 0.4 1.04 0.6 0.857 0.94 0.07; Chi <sup>2</sup> = 5:	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35 <b>372</b> 2.49, df=	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942	95 30 29 30 30 30 30 30 35 <b>369</b>	1.8% 1.6% 1.6% 1.5% 1.6% 1.5% 1.5% 1.3% 1.1% <b>15.1</b> %	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18]	
L1.5 Sleep disorders           sai VkJ 2011           Liu F 2015           JXY 2008           Ren S 2017           Vang YY 2015           Yang WF 2017           Yin Y 2018           Chang ZO 2011           Chang ZO 2011           Chang ZO 2011           Chau B 2018           Labutotai (95% C1)           Heterogeneity, Tau <sup>2</sup> = 0           Test for overall effect. Z	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47 1.52 0.5 1.13 0.4 1.16 0.4 1.16 0.4 1.04 0.6 0.857 0.94 0.07; Chi <sup>2</sup> = 5:	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35 <b>372</b> 2.49, df=	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942	95 30 29 30 30 30 30 30 35 <b>369</b>	1.8% 1.6% 1.6% 1.5% 1.6% 1.5% 1.5% 1.3% 1.1% <b>15.1</b> %	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07]	
2.1.5 Steep disorders 3ai WJ 2011 JUF 2015 JXY 2008 Xen S 2017 Wang YY 2015 Yang WF 2017 Yin Y 2018 Chang Zio 2011 Zhou B 2018 Chou JC 2013 Liberogeneity: Tay= 0 Feet for overall effect. Z 2.1.6 Hypnotics	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47 1.52 0.5 1.13 0.4 1.16 0.4 1.16 0.4 1.04 0.6 0.857 0.94 0.07; Chi <sup>2</sup> = 5:	2 30 2 96 8 30 9 30 9 30 7 31 3 30 2 30 7 30 4 35 372 2.49, df = .02)	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942	95 30 29 30 30 30 30 30 35 <b>369</b>	1.8% 1.6% 1.6% 1.5% 1.6% 1.5% 1.5% 1.3% 1.1% <b>15.1</b> %	-0.38 [0.65, -0.21] -0.51 [0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04]	
2.1.5 Sleep disorders Sal WJ 2011 Liu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015 Grang WF 2017 Cin Y 2018 Chang ZZ 2011 Zhou JZ 2013 Li Zhou JZ 2013 Li Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = 0 Fest for overall effect Z Z.1.6 Hypnotics Wang YY 2015	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.47 1.52 0.5 1.13 0.47 1.52 0.5 1.13 0.4 1.16 0.4 1.04 0.6 0.857 0.94 0.07; Chi <sup>2</sup> = 5 = 2.36 (P = 0	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 7 30 4 35 <b>372</b> 2.49, df= 1.02) 3 30	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942	95 30 29 30 30 30 30 30 35 <b>369</b> ;  *= 83	1.8% 1.6% 1.9% 1.5% 1.5% 1.5% 1.3% 1.1% <b>15.1</b> %	-0.38 [-0.55, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07]	
2.1.5 Sieep disorders           Bai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang YZ 2015	1.57 0.7 1.19 0.5 1.17 0.5 1.13 0.47 1.52 0.5 1.13 0.47 1.16 0.4 0.857 0.94 0.07; Chi <sup>2</sup> 5 = 2.36 (P = C 1.1 0.88 0.77 0.5 1.15 0.5	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35 372 2.49, df = .02) 3 30 7 30 5 30	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 .000001)	95 30 29 30 30 30 30 30 35 <b>369</b> ;  *= 83	1.8% 1.6% 1.9% 1.6% 1.5% 1.5% 1.3% 1.1% <b>15.1%</b> %	-0.38 [0.55, 0.21] -0.51 [0.07, 0.25] 0.06 [-0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.70 [-0.21, 0.36] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.98 [-1.42, -0.67]	
2.1.5 Sileep disorders 3ai WJ 2011 Ju F 2015 JXY 2008 Ren S 2017 Wang YY 2015 Yang YZ 2017 Yang YZ 2017 Yang YZ 2017 Yang YZ 2017 Yang ZO 2011 Zhou JZ 2013 Disubtotal (95% C1) Heterogeneity: Tau <sup>2</sup> = 0 Fest for overall effect: Z 2.1.6 Hypnotics Yang YZ 2015 Yang YZ 2015 Yang YZ 2015 Yang ZO 2011 Zhang ZQ 2011 Zhang ZQ 2013	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.1 1.33 0.47 1.52 0.5 1.13 0.44 1.16 0.4 1.14 0.6 0.857 0.94 0.07; Chi <sup>e</sup> = 5 = 2.36 (P = C 1.1 0.80 0.77 0.5	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 31 3 30 2 4 35 372 2.49, df = 1.02) 3 30 7 30 1.02)	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57 1.7	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 .000001) 0.774 1.02	95 30 29 30 30 30 30 30 35 <b>369</b> ;  *= 83 30 30 30 30 30 30	1.8% 1.6% 1.6% 1.6% 1.5% 1.3% 1.3% 1.3% 1.1% 1.2% 1.0% 1.0% 1.6% 1.1%	-0.38 [0.65, -0.21] -0.51 [-0.77, -0.25] 0.06 [-10.3, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.30, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.21 [-0.58, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [-1.43, -0.43] -0.94 [-1.21, -0.79]	
1.1.5 Sleep disorders           3ai WJ 2011           Ju F 2015           JXY 2008           Yen S 2017           Yang YY 2015           'ang WF 2017           'in Y 2018           Chang Zo 2011           Chou JC 2013           'est for overail effect. Z           *L1.6 Hypnotics           'Yang Y 2015           'in Y 2018           Chang Zo 2011           Lin Y 2018           Un Y 2015           'uh Y 2018           Chang Zo 2011           'hou JC 2013           'uh Y 2015           '	1.57 0.7 1.19 0.5 1.17 0.3 1.13 0.47 1.52 0.5 1.13 0.47 1.52 0.5 1.13 0.47 1.14 0.4 0.0867 0.94 0.07; Chi <sup>2</sup> 5 = 2.36 (P = C 1.1 0.80 0.77 0.9 1.15 0.5 0.8 0.83	2 30 2 96 8 30 9 30 9 30 9 30 9 30 9 30 9 30 9 30 2 30 7 31 3 30 7 30 4 35 372 2.49, df = .02) 13 30 5 30 5 30 125 125	1.57 1.68 0.97 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57 1.7 2.09 1.543	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942 .00001) 0.774 1.02 0.52 1.1	95 30 29 30 30 30 30 30 35 <b>369</b> ;  *= 83 30 30 30 30 30 30 35 <b>125</b>	1.8% 1.6% 1.6% 1.5% 1.5% 1.5% 1.5% 1.3% 1.1% <b>15.1%</b> %	-0.38 [0.55, 0.21] -0.51 [0.07, 0.25] 0.06 [-0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.20 [-0.58, 0.18] -0.21 [-0.56, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.98 [-1.42, -0.67]	
1.1.5 Sleep disorders           sai WJ 2011           Liu F 2015           JXY 2008           Yen S 2017           Yang YY 2015           Yang YY 2017           Yang YY 2017           Yang YY 2018           Chang Zo 2011           Chou JC 2013           You JC 2013           You JC 2013           Yang YY 2015           Yang YY 2016           Yang YY 2017           Yang YY 2018           Yang YY 2011           Yang YY 2013           Yang YY 2014           Yang YY 2015           Yang YY 2011           Yang YY 2011 <td>1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.47 1.52 0.5 1.13 0.47 1.52 0.5 1.13 0.47 1.16 0.4 0.0857 0.94 0.07; Chi<sup>2</sup> = 5 1.1 0.80 0.77 0.5 1.1 0.80 0.77 0.5 1.15 0.5 0.8 0.83 0.8 0.83 0.15 0.8 0.8 0.83 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.15 0.8 0.15 0</td> <td>2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35 372 2.49, df = 102 13 30 7 30 15 30 125 97, df = 3 97, df = 3 125 125 125 125 125 125 125 125</td> <td>1.57 1.68 0.97 1.23 1.5 1.09 1.24 1.371 9 (P &lt; 0 1.57 1.7 2.09 1.543</td> <td>0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942 .00001) 0.774 1.02 0.52 1.1</td> <td>95 30 29 30 30 30 30 30 35 <b>369</b> ;  *= 83 30 30 30 30 30 30 35 <b>125</b></td> <td>1.8% 1.6% 1.6% 1.6% 1.5% 1.3% 1.3% 1.3% 1.1% 1.2% 1.0% 1.0% 1.6% 1.1%</td> <td>-0.38 [0.65, -0.21] -0.51 [-0.77, -0.25] 0.06 [-10.3, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.30, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.21 [-0.58, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [-1.43, -0.43] -0.94 [-1.21, -0.79]</td> <td></td>	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.47 1.52 0.5 1.13 0.47 1.52 0.5 1.13 0.47 1.16 0.4 0.0857 0.94 0.07; Chi <sup>2</sup> = 5 1.1 0.80 0.77 0.5 1.1 0.80 0.77 0.5 1.15 0.5 0.8 0.83 0.8 0.83 0.15 0.8 0.8 0.83 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.8 0.15 0.15 0.8 0.15 0	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35 372 2.49, df = 102 13 30 7 30 15 30 125 97, df = 3 97, df = 3 125 125 125 125 125 125 125 125	1.57 1.68 0.97 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57 1.7 2.09 1.543	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942 .00001) 0.774 1.02 0.52 1.1	95 30 29 30 30 30 30 30 35 <b>369</b> ;  *= 83 30 30 30 30 30 30 35 <b>125</b>	1.8% 1.6% 1.6% 1.6% 1.5% 1.3% 1.3% 1.3% 1.1% 1.2% 1.0% 1.0% 1.6% 1.1%	-0.38 [0.65, -0.21] -0.51 [-0.77, -0.25] 0.06 [-10.3, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.30, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.21 [-0.58, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [-1.43, -0.43] -0.94 [-1.21, -0.79]	
1.1.5 Sieep disorders           Sai WJ 2011           Ju F 2015           JXY 2008           Yen S 2017           Yang YY 2015           Yang YY 2015           Yang YY 2015           Yang YZ 2017           Im Y 2018           Chang ZQ 2011           Chou JC 2013           Via Vetrogeneity, Tauf= 0           Vetrogeneity, Tauf= 0           Vetrogeneity, Tauf= 0           Chou JC 2013           Lin Y 2016           Chang ZQ 2011           Chang ZQ 2013           Subtotal (95% CI)           Vetorgeneity, Tauf= 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 4 35 372 2,49, df = 102 13 30 15 30 125 97, df = 3 .00001)	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57 1.7 2.09 1.543 8 (P = 0.2	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 0.00001) 0.774 1.02 0.52 1.1	95 30 29 30 30 30 35 <b>369</b> 5 <b>7</b> = 83 30 30 30 30 30 35 <b>125</b> 24%	1.8% 1.6% 1.9% 1.5% 1.5% 1.5% 1.3% 1.3% 1.1% 1.2% 1.0% 1.6% 1.6% 1.1% 4.9%	-0.38 [0.65, -0.21] -0.51 [-0.77, -0.25] 0.06 [-10.03, 0.15] -0.37 [-0.64, -0.10] 0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.58, 0.18] -0.20 [-0.58, 0.18] -0.21 [-0.58, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [-1.43, -0.43] -0.94 [-1.21, -0.67] -0.79 [-1.01, -0.57]	
2.1.5 Steep disorders           Bai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang WF 2017           Yin Y 2018           Thang Zo 2011           Zhou JZ 2013           Fest for overall effect Z           2.1.6 Hypnotics           Wang YY 2015           Yin Y 2018           Shabtotal (95% CI)           Heterogeneity: Tau" = 0           Subtotal (95% CI)           Heterogeneity: Tau" = 0           Fest for overall effect Z           2.1.7 Daylime functional all WJ 2011	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 30 2 96 8 30 9 30 7 31 3 30 7 30 7 30 7 30 7 30 7 30 7 30 5 30 7 30 7 30 7 30 7 30 7 30 7 30 7 30 7	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57 1.7 2.09 1.543 3 (P = 0.2	0.68 0.61 0.596 0.68 0.63 0.66 0.81 0.942 0.0001) 0.774 1.02 0.52 1.1 26); I <sup>*</sup> = 0.98	95 30 29 30 30 30 30 35 <b>369</b> ;  * = 83 30 30 30 30 35 <b>24%</b>	1.8% 1.6% 1.9% 1.6% 1.5% 1.5% 1.3% 1.3% 1.1% 1.1% 1.2% 1.2%	-0.38 [0.65, -0.21] -0.51 [-0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.39 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.51 [-0.96, -0.07] -0.52 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [-1.43, -0.43] -0.94 [-1.21, -0.67] -0.74 [-1.20, -0.29] -0.79 [-1.01, -0.57]	
2.1.5 Sieep disorders           Bai WJ 2011           Jul F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang YY 2018           Zhang ZO 2011           Chou JC 2013           Di Y 2018           Vang YY 2015           Heterogeneity: Tau" = 0           Fest for overall effect: Z           2.1.6 Hypnotics           Wang YY 2015           Yang YY 2015           Yang YY 2015           Proug ZO 2011           Chang ZO 2013           Subtodi (95% C)           Heterogeneity: Tau" = 0           Febrogeneity: Tau" = 0           Fest for overall effect: Z           2.1.6 Hypnotics           Nang YY 2015           Tim Y 2018           Subtodi (95% C)           Heterogeneity: Tau" = 0           Fest for overall effect: Z           2.1.7 Daytime function           Sal WJ 2011           Jul F 2015	1.57 0.7 1.19 0.5 1.17 0.3 1.03 0.47 1.52 0.5 1.13 0.47 1.52 0.5 1.13 0.47 1.16 0.4 0.857 0.94 0.07; Chi <sup>2</sup> = 5 0.857 0.94 0.77 0.5 1.15 0.5 0.8 0.83 0.01; Chi <sup>2</sup> = 3 = 6.92 (P < C 1.45 0.7 0.98 0.5	2 30 2 96 8 30 9 30 7 31 3 30 2 30 7 30 2 30 7 30 3 30 3 30 3 30 3 72 3 30 3 72 3 30 3 72 3 30 3 30	1.57 1.68 0.97 1.7 1.23 1.5 1.09 1.24 1.371 9 (P < 0 1.57 1.7 2.09 1.543 3 (P = 0.2 2.07 1.67	0.68 0.61 0.596 0.68 0.63 0.66 0.81 0.942 0.00001) 0.774 1.02 0.52 1.1 226); I <sup>*</sup> = 0.98 0.71	95 30 29 30 30 30 30 30 30 30 30 30 30 30 30 30	1.8% 1.6% 1.6% 1.5% 1.5% 1.5% 1.5% 1.3% 1.1% 1.1% 1.2% 1.0% 1.0% 1.1% 4.9%	-0.38 [0.65, -0.21] -0.51 [0.77, -0.25] 0.06 [-0.03, 0.15] -0.37 [-0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.26, -0.07] -0.20 [-0.56, 0.18] -0.51 [-0.86, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [1.43, -0.43] -0.74 [-1.20, -0.29] -0.74 [-1.20, -0.29] -0.79 [-1.06, -0.18] -0.68 [-0.61, -0.78] -0.68 [-0.61, -0.78]	
2.1.5 Steep disorders           3ai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang YY 2015           Yang YZ 2011           Thou JZ 2011           Thou JZ 2013           Listorda (95% CI)           Heterogeneity: Tau*= 0           Subtotal (95% CI)           Heterorerail effect Z           21.16 Hypnotics           Wang Y 2015           Yang Y 2013           Zhota JZ 20 2011           Pasthotal (95% CI)           Heterogeneity: Tau*= 0           Fest for overail effect Z           21.17 Daytime function           Bai WJ 2011           Ju F 2015           Ju J Y 2013	1.57 0.7 1.19 0.5 1.17 0.3 1.33 0.4 1.33 0.4 1.13 0.4 1.14 0.6 0.857 0.94 0.857 0.94 0.94 0.85 0.94 0.85 0.94 0.85 0.94 0.85 0.94 0.85 0.95 0.94 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	2 30 2 966 8 30 9 30 2 33 3 30 2 30 4 35 3 322 3 30 4 35 3 322 3 30 3 30 3 32 3 30 3 32 3 30 3	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.57\\ 1.23\\ 1.57\\ 1.24\\ 1.371\\ 9\ (P\ <\ 0\\ 1.57\\ 1.7\\ 2.09\\ 1.543\\ 0\ (P\ =\ 0.2\\ 2.07\\ 1.67\\ 1.67\\ 1.67\\ 1.67\\ 1.45\\ \end{array}$	0.68 0.61 0.596 0.68 0.63 0.68 0.81 0.942 0.942 0.0001) 0.774 1.02 0.52 1.1 26); F= 0.98 0.71 0.78	95 30 29 30 30 30 30 30 30 35 369 30 30 30 30 30 30 30 30 32 24% 30 95 45	1.8% 1.6% 1.6% 1.6% 1.5% 1.5% 1.3% 1.1% 1.1% 1.1% 1.6% 1.6% 1.6% 1.6% 1.2% 1.2% 1.2%	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.06 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [0.64, -0.10] -0.77 [0.21, 0.36] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [10.87, -0.07] -0.33 [1.43, -0.43] -0.93 [-1.41, -0.43] -0.93 [-1.01, -0.57] -0.74 [-1.20, -0.29] -0.75 [-1.06, -0.18] -0.65 [-1.06, -0.18] -0.65 [-0.5, 0.15]	
2.1.5 Sleep disorders Sai WJ 2011 Lu F 2015 LIX 2008 Ren S 2017 Wang YY 2015 Kang VF 2017 Yang VF 2017 Yang Z0 2011 Zhou JC 2013 Litter 2018 Chang Z0 2011 Litter 2013 Litter	1.57 0.7 1.19 0.5 1.17 0.3 0.1 1.33 0.47 1.33 0.47 1.33 0.47 1.13 0.4 1.16 0.4 0.857 0.94 0.07; Chi <sup>2</sup> = 5 2.36 (P = C 1.1 0.80 0.77 0.5 1.1 0.80 0.77 0.5 1.15 0.5 0.8 0.83 0.01; Chi <sup>2</sup> = 3 = 6.92 (P < C 1.45 0.7 0.98 0.8 1.27 0.5 1.27 0.5 1.2	2 30 2 96 8 30 9 30 7 31 3 30 2 230 7 30 2 249, df = 3 30 12 5 97, df = 3 10001) 3 30 12 97, df = 3 10001) 3 30 12 96, df = 13 30 12 96, df = 13 30 12 97, df = 13 30 12 96, df = 13 30 10 97, df = 10 97,	1.57 1.68 0.97 1.7 1.23 1.69 1.24 1.371 1.29 1.24 1.371 1.57 1.7 2.09 1.543 8 (P = 0.2 2.07 1.643	0.68 0.61 0.596 0.68 0.63 0.66 0.81 0.942 0.00001) 0.7774 1.02 0.52 1.1 26); F= 0.98 0.71 0.98 0.71 0.98 0.46	95 30 29 30 30 30 30 30 30 35 369 ;  * = 83 30 30 30 30 30 30 24% 45 30	1.8% 1.6% 1.6% 1.6% 1.5% 1.5% 1.5% 1.5% 1.5% %	-0.38 [0.65, 0.21] -0.51 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.29 [-0.58, 0.18] -0.21 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.39 [-1.42, -0.63] -0.62 [+1.06, -0.18] -0.69 [-0.91, -0.47] -0.15 [-0.45, -0.18] -0.69 [-0.91, -0.47] -0.15 [-0.45, -0.18] -0.99 [-1.24, -0.68]	
2.1.5 Steep disorders Bai WJ 2011 Lu F 2015 Li XY 2008 Ren S 2017 Wang YY 2015 Yang YY 2015 Yang YY 2015 Yang ZY 2011 Zhou JZ 2011 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = 0 Fest for overall effect: Z 2.1.6 Hypnotics Wang YY 2015 Zhang ZQ 2011 East for overall effect: Z 2.1.6 Hypnotics Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = 0 Fest for overall effect Z 2.1.7 Daytime function Bai WJ 2011 Li ZY 2013 Li XY 2008 Ren S 2017	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 30 2 96 8 30 9 30 2 30 9 30 2 30 2 30 4 35 2 4 3 30 2 30 4 35 2 5 3 30 5	1.57 1.68 0.97 1.7 1.23 1.69 1.24 1.371 9 (P < 0 1.57 2.09 1.543 8 (P = 0 2.07 1.67 1.67 2.23 0.9 2.07 1.67 1.67 2.445 2.230 0.97	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942 0.774 1.02 0.52 1.1 26);  *= 0.98 0.71 0.98 0.71 0.88 0.71	95 30 29 30 30 30 30 30 30 30 369 96 30 30 30 30 30 30 30 30 32 24% 30 95 45 30 92 92 92	1.8%, 1.6%, 1.9%, 1.6%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.0%, 4.9%, 1.2%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.6%, 1.5%, 1.6%,1.6%,1.6%,1.6%,1.6%,1.6%,1.6%,1.6%,	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.07 [0.64, 0.010] 0.29 [0.03, 0.61] -0.37 [0.64, -0.10] 0.07 [0.21, 0.36] -0.20 [0.58, 0.18] -0.20 [0.58, 0.18] -0.51 [0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.33 [1.43, -0.43] -0.93 [1.43, -0.43] -0.94 [+1.21, -0.67] -0.79 [-1.01, -0.57] -0.62 [+1.06, -0.18] -0.68 [+0.91, -0.47] -0.68 [+0.91, -0.47] -0.69 [+0.45, 0.15] -0.96 [+1.24, -0.68]	
2.1.5 Sleep disorders Bai WJ 2011 Lu F 2015 Li Y 2008 Ren S 2017 Yang VF 2017 Yang VF 2017 Yang VF 2017 Yang Z 2011 Zhou JC 2013 Li Constant 2018 Constant 2018	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 30 2 96 8 30 9 30 2 30 2 30 2 30 2 30 3 32 2 49, df = 3 32 2 49, df = 3 32 3 35 125 97, df = 3 30 125 97, df = 3 30 125 125 125 125 125 125 125 125 125 125	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.09\\ 1.24\\ 1.371\\ 9\ (P < 0\\ 1.54\\ 3\\ 0\ (P = 0.\\ 2.07\\ 1.53\\ 0.97\\ 1.53\\ 0.97\\ 1.53\\ 0.97\\ 1.53\\ 0.97\\ 1.53\\ 0.97\\ 1.53\\ 0.97\\ 0.53\\ 0.53\\ 0.97\\ 0.53\\ 0.97\\ 0.53\\ 0.97\\ 0.53\\ 0.97\\ 0.53\\ 0.97\\ 0.53\\ 0.97\\ 0.53\\ 0.97\\ 0.9$	0.68 0.61 0.18 0.596 0.68 0.63 0.66 0.81 0.942 0.00001) 0.774 1.02 0.52 1.1 26); I*= 0.98 0.71 0.8 0.61 0.68	95 30 29 30 30 30 30 30 35 <b>369</b> 5 369 30 30 30 30 30 30 32 24% 30 5 5 24%	1.8% 1.6% 1.9% 1.6% 1.5% 1.5% 1.3% 1.5% 1.3% 1.1% 1.1% 4.9% 1.2% 1.0% 1.2% 1.0% 1.5% 1.5% 1.5% 1.4%	-0.38 [0.55, 0.21] -0.51 [0.77, 0.25] 0.06 [-0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.20 [-0.58, 0.18] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.34 [-1.21, -0.67] -0.34 [-1.21, -0.67] -0.74 [-1.20, -0.29] -0.79 [-1.01, -0.57] -0.45 [-0.45, 0.15] -0.45 [-0.45, 0.15] -0.36 [-1.24, -0.88] -0.13 [-0.38, 0.12]	
2.1.5 Sleep disorders Bai WJ 2011 JUF 2015 JXY 2008 Ren S 2017 Wang YY 2015 Grang WF 2017 Grang WF 2017 Grang WG 2018 Chang ZQ 2011 Chou JC 2013 Subtod (95% C) Heterogeneik; Tau <sup>2</sup> = 0 Fest for overall effect: Z 2.1.6 Hypnotics Wang YY 2015 Grang ZQ 2011 Heterogeneik; Tau <sup>2</sup> = 0 Fest for overall effect: Z 2.1.7 Daytime function Sai WJ 2011 JUF 2015 JUF	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2 30 22 96 8 30 9 30 2 30 2 30 2 30 2 30 2 30 3 30 2 30 2	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.09\\ 1.24\\ 1.371\\ 9\ (P<0\\ 1.543\\ 0\ (P=0.\\ 2.07\\ 1.653\\ 0\ (P=0.\\ 1.543\\ 0\ (P=0.\\$	0.68 0.61 0.18 0.596 0.63 0.63 0.66 0.81 0.942 0.021 1.02 0.52 1.1 26); P = 0.98 0.774 1.02 0.52 1.1 26); P = 0.98 0.774 0.68 1.0 8 0.66 0.68 0.63 0.66 0.63 0.65 0.65 0.66 0.63 0.66 0.65 0.66 0.65 0.66 0.65 0.66 0.65 0.65	95 30 29 30 30 30 30 30 30 30 30 30 30 30 30 30	1.8%, 1.6%, 1.9%, 1.5%, 1.5%, 1.5%, 1.5%, 1.3%, 1.5%, 1.3%, 1.6%, 1.6%, 1.6%, 1.6%, 1.6%, 1.6%, 1.5%, 1.4%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.5%, 1.6%, 1.6%, 1.6%, 1.6%, 1.5%, 1.6%, 1.5%, 1.6%, 1.5%, 1.6%, 1.5%, 1.6%, 1.5%, 1.6%, 1.5%, 1.6%, 1.5%,1	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.06 [-0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.07 [-0.21, 0.35] -0.20 [-0.56, 0.18] -0.20 [-0.56, 0.18] -0.21 [-0.67] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.93 [-1.42, -0.43] -0.74 [-1.20, -0.29] -0.74 [-1.20, -0.29] -0.74 [-1.20, -0.29] -0.76 [-1.06, -0.18] -0.68 [-0.91, -0.47] -0.15 [-0.45, 0.16] -0.96 [-1.24, -0.68] -0.17 [-0.52, 0.18] -0.13 [-0.38, 0.27] -0.43 [-0.72, -0.14]	
2.1.5 Steep disorders           3ai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang WF 2017           You JQ 2011           Zhong XZ 2011           Zhong XZ 2011           Zhou JZ 2013           Fest for overail effect. Z           Z.1.6 Hypnotics           Wang YY 2015           Yu Y 2013           Zhotod (95% C1)           Heterogeneilty: Tau* = 0           Zest for overail effect. Z           Z.1.7 Daytime function           Sai WJ 2011           Ju JY 2013           Ju JY 2013           Ju JY 2013           Ju JY 2013           Ju Y 2015           Yang YY 2015           <	1.57 0.7 1.19 0.5 1.17 0.3 0.1 1.33 0.4 1.52 0.5 1.13 0.4 1.52 0.5 1.13 0.4 1.16 0.4 0.857 0.94 0.07; Chi <sup>2</sup> = 5 = 2.38 (P = C 1.1 0.86 0.77 0.5 0.8 0.83 0.01; Chi <sup>2</sup> = 3 = 6.92 (P = C 1.4 0.145 1.7 0.8 0.8 0.7 0.8 0.7 1.4 0.145 1 0.5 1 0	2 30 2 96 8 30 9 30 7 31 3 30 7 30 7 30 7 30 7 30 7 30 7 30 7 30	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.09\\ 1.24\\ 1.371\\ 1.29\\ 1.24\\ 1.371\\ 1.7\\ 2.09\\ 1.543\\ 8\\ (P=0.2\\ 2.07\\ 1.67\\ 1.45\\ 2.23\\ 1.43\\ 1.43\\ 1.57\\$	0.68 0.61 0.18 0.596 0.63 0.63 0.66 0.81 0.942 0.0001) 0.774 1.02 0.52 1.1 226);  *= 0.98 0.71 0.82 0.67 0.68 0.67 0.68	95 30 29 30 30 30 30 30 30 30 30 30 30 30 30 30	1.8% 1.6% 1.9% 1.6% 1.5% 1.6% 1.5% 1.1% 4.1.1% 1.1% 1.1% 4.9%	-0.38 [0.55, 0.21] -0.51 [0.77, 0.25] 0.06 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [0.64, -0.10] -0.71 [0.21, 0.36] -0.51 [0.96, -0.07] -0.52 [-0.41, -0.67] -0.32 [-0.41, -0.67] -0.34 [-1.21, -0.67] -0.74 [-1.20, -0.29] -0.75 [-1.04, -0.18] -0.62 [-1.06, -0.18] -0.62 [-1.06, -0.18] -0.62 [-1.06, -0.18] -0.62 [-1.06,	
2.1.5 Sieep disorders           Bai WJ 2011           Jul F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang YY 2018           Zhang ZO 2011           Chou JC 2013           Chou JC 2013           Diabtotal (95% CD)           Felerogeneity: Tau" = 0           Felerogeneity: Tau" = 0           Pang Y2 2015           Yang YY 2015           Yang Y2 2013           Subtotal (95% CD)           Pang Y2 2013           Subtotal (95% CD)           Febrogeneity: Tau" = 0           Feetrogeneity: Tau" = 0     <	1.57 0.7 1.19 0.5 1.19 0.5 1.19 0.5 1.13 0.4 1.13 0.4 1.13 0.4 1.13 0.4 1.13 0.4 0.657 0.94 0.057 0.92 1.15 0.5 0.8 0.83 0.8 0.83 1.45 0.7 0.8 0.8 1.3 0.6 1.45 0.7 0.98 0.8 1.3 0.6 1.27 0.6 0.8 0.7 1.4 0.145 1 0.5 1	2 300 2 96 8 300 7 311 3 300 7 312 3 300 7 312 3 300 7 312 3 300 7 302 3 300 7 300 3 355 3 300 125 97, df = 3 3 300 1 2 96 6 455 97, df = 3 3 300 1 3 30 2 96 6 455 1 3 300 2 96 6 455 1 3 30 2 96 6 455 1 3 30 1	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.09\\ 1.24\\ 1.371\\ 1.371\\ 1.7\\ 2.09\\ 1.543\\ 3 \ (P=0.2)\\ 2.07\\ 1.67\\ 2.23\\ 0.97\\ 1.45\\ 2.23\\ 0.97\\ 1.53\\ 1.43\\ 1.57\\ 1.53\\ 1.43\\ 1.57\\ 1.53\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.53\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.57\\ 1.57$	0.68 0.61 0.18 0.596 0.63 0.66 0.61 0.942 0.0001) 0.774 1.02 0.52 1.1 26); I*= 0.98 0.98 0.48 0.67 1.08 0.68 1.0.81 0.68 1.0.81 0.68 1.0.82 0.68 1.0.82 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68	95 30 29 30 30 30 30 30 35 <b>369</b> 369 369 369 30 30 35 <b>125</b> 224% 30 95 5 30 95 30 30 30 30 30 30 30 30 30 30 30 30 30	1.8% 1.6% 1.6% 1.6% 1.6% 1.5% 1.6% 1.1% * * * * * * * * * * * * * * * * * * *	-0.38 [0.65, 0.21] -0.51 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] 0.37 [-0.24, -0.03] -0.37 [-0.24, -0.04] -0.47 [-0.87, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.39 [-1.34, -0.43] -0.34 [-1.34, -0.43] -0.57 [-0.94, -1.24, -0.63] -0.74 [-1.20, -0.29] -0.79 [-1.01, -0.57] -0.68 [-0.91, -0.47] -0.15 [-0.45, 0.18] -0.15 [-0.45, 0.18] -0.15 [-0.48, 0.12] -0.43 [-0.72, -0.14] -0.45 [-0.50, -0.14] -0.54 [-0.5, 0.53]	
2.1.5 Sleep disorders 3ai WJ 2011 Ju F 2015 JXY 2008 Ren S 2017 Wang YY 2015 Yang YY 2015 Yang YY 2015 Yang YZ 2011 Yhou JZ 2011 Subtoda (95% CI) Heterogeneity, Tau*= 0 Fest for overall effect. Z 2.1.6 Hypnotics Wang YY 2015 Yang YZ 2013 Subtotal (95% CI) Heterogeneity, Tau*= 0 Fest for overall effect. Z 2.1.7 Daytime function 3ai WJ 2011 Ju JY 2013 JXY 2008 Ren S 2017 Wang YY 2015 Yang WF 2017 Yang WF 2017 Yang WF 2017 Yang WF 2017 Yang YF 2017	1.57 0.7 1.19 0.5 1.17 0.3 1.13 0.4 1.13 0.4 1.13 0.4 1.14 0.5 0.857 0.94 0.857 0.94 0.957 0	2 30 2 96 8 30 7 31 3 2 30 7 31 3 2 30 7 30 3 372 2 30 7 30 3 372 3 300 3 372 3 300 3 300 3 300 8 8 31 3 30 6 3 30 3 30 3 30 3 30 3 30 3 30 3	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.09\\ 1.24\\ 1.371\\ 1.2\\ 1.4\\ 1.371\\ 1.2\\ 0.9\\ 1.543\\ 0.9\\ 1.543\\ 0.9\\ 1.543\\ 0.9\\ 1.57\\ 1.57\\ 1.43\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.58\end{array}$	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 0.942 0.942 1.1 26); P= 0.98 0.71 0.88 0.46 0.67 0.681 0.46 0.67 0.681 0.46	95 30 29 30 30 30 30 36 36 36 36 36 36 36 36 35 125 224% 30 95 45 30 95 45 30 30 30 30 30 30 30 30 30 30 30 30 30	$\begin{array}{c} 1.8\%\\ 1.6\%\\ 1.9\%\\ 1.6\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.1\%\\ 4.9\%\\ \end{array}$	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.06 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [0.64, -0.10] -0.37 [0.64, -0.10] -0.51 [0.96, -0.07] -0.22 [-0.41, -0.04] -0.22 [-0.41, -0.04] -0.33 [1.43, -0.43] -0.93 [1.43, -0.43] -0.93 [1.43, -0.43] -0.93 [1.43, -0.43] -0.93 [1.44, -0.67] -0.74 [1.20, -0.29] -0.75 [-1.65, -0.18] -0.15 [-0.45, 0.15] -0.15 [-0.45, 0.15] -0.45 [-0.45, 0.38] -0.15 [-0.45, 0.15] -0.44 [-0.45, 0.32]	
2.1.5 Sleep disorders sai WJ 2011 Liu F 2015 LiXY 2008 Ren S 2017 Wang YY 2015 fang WF 2017 fin Y 2018 Chang Zo 2011 Phou JC 2013 Litter Control Control Control Subtotal (95% CI) Heterogeneity. Tau <sup>2</sup> = 0 Fest for overall effect. Z 2.1.6 Hypnotics Wang YY 2015 fin Y 2018 Chang Zo 2011 Phou JC 2013 Subtotal (95% CI) Heterogeneity. Tau <sup>2</sup> = 0 Fest for overall effect. Z 2.1.7 Dayline function Sai WJ 2015 Liu JY 2013 Li YY 2008 Ren S 2017 Wang YY 2015 Yang YZ 2015 Yang YZ 2015 Yang YY 2015 Yang YZ 2017 Yang YY 2015 Yang YZ 2017 Yang YZ 2017 Yang YZ 2017 Yang YZ 2017 Yang YZ 2015 Yang YZ 2017 Yang YZ 2015 Yang YZ 2017 Yang YZ 2017 Yang YZ 2015 Yang YZ 2017 Yang YZ 2017 YZ 2017 YANG YZ 2017 YANG YZ 2017 YZ 201	1.57 0.7 1.19 0.5 1.19 0.5 1.19 0.5 1.13 0.4 1.13 0.4 1.13 0.4 1.13 0.4 1.13 0.4 0.657 0.94 0.057 0.92 1.15 0.5 0.8 0.83 0.8 0.8 1.3 0.6 1.45 0.7 0.8 0.8 1.3 0.6 1.45 0.7 0.8 0.8 0.8 0.7 1.4 0.4 0.8 0.8 0.8 0.7 1.4 0.4 0.8 0.7 1.7 0.8 0.8 0.7 0.8 0.8 0.8 0.7 1.7 0.8 0.8 0.7 0.8 0.8 0.8 0.7 1.4 0.4 0.7 0.5 0.8 0.8 0.8 0.7 1.4 0.4 0.7 0.5 1.5 0.7 0.5 0.8 0.8 0.8 0.7 1.4 0.4 0.7 0.5 0.8 0.8 0.8 0.7 0.7 0.5 0.8 0.7 0.7 0.5 0.8 0.8 0.8 0.7 0.7 0.5 0.8 0.8 0.8 0.7 0.7 0.5 0.8 0.7 0.7 0.5 0.7 0.5 0.5 0.5 0.5 0.	2 30 2 96 8 30 7 31 3 30 7 31 3 30 7 30 7 30 7 30 5 30 5 30 5 30 5 30 5 30 5 30 5 30 5	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.09\\ 1.24\\ 1.371\\ 1.2\\ 1.4\\ 1.371\\ 1.2\\ 0.9\\ 1.543\\ 0.9\\ 1.543\\ 0.9\\ 1.543\\ 0.9\\ 1.57\\ 1.57\\ 1.43\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.57\\ 1.33\\ 1.58\end{array}$	0.68 0.61 0.18 0.596 0.63 0.66 0.61 0.942 0.0001) 0.774 1.02 0.52 1.1 26); I*= 0.98 0.98 0.48 0.67 1.08 0.68 1.0.81 0.68 1.0.81 0.68 1.0.82 0.68 1.0.82 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68	95 30 29 30 30 30 35 <b>369</b> 369 369 369 30 30 35 <b>125</b> 24% 30 95 95 95 95 92 90 30 30 30 30 30 30 30 30 30 30 30 30 30	$\begin{array}{c} 1.8\%\\ 1.6\%\\ 1.6\%\\ 1.6\%\\ 1.5\%\\ 1.6\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.1\%\\ 1.1\%\\ 1.2\%\\ 1.2\%\\ 1.2\%\\ 1.2\%\\ 1.6\%\\ 1.7\%\\ 1.6\%\\ 1.6\%\\ 1.4\%\\ 1.4\%\\ 1.4\%\\ 1.4\%\\ 1.4\%\\ 1.4\%\\ 1.4\%\\ 1.4\%\\ 1.1\%\\ 1.4\%\\ 1.1\%$	-0.38 [0.65, 0.21] -0.51 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.39 [-1.43, -0.43] -0.34 [-1.24, -0.68] -0.35 [-0.96, -0.15] -0.36 [-0.38, 0.12] -0.45 [-0.96, -0.15] -0.44 [-0.45, 0.53] -0.44 [-0.45, 0.53] -0.45 [-0.96, -0.07]	
1.1.5 Sleep disorders           Sai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Yang YY 2015           Yang YY 2016           Yang YY 2016           Yang YY 2016           Yang YY 2013           Yabtotal (95% CI)           Yang YY 2015           Ju Y 2013           Yathotal (95% CI)		2 30 8 30 8 30 7 31 3 2 30 7 30 2 30 3 30 3 30 3 30 3 30 3 30 3 30 3	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.0\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.57\\ 1.7\\ 2.09\\ 1.543\\ 0.97\\ 1.53\\ 1.68\\ 1.33\\ 1.58\\ 1.345\\ 1.345\\ \end{array}$	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 0.572 1.1 26); F= 0.98 0.774 1.02 0.52 1.1 1.2 26); F= 0.98 0.63 1.07 0.88 0.63 0.68 1.0.78 0.68 1.0.78 0.68 0.63 0.63 0.63 0.64 0.64 0.64 0.64 0.64 0.64 0.64 0.64	95 30 29 30 30 30 30 30 30 30 35 36 36 37 30 30 30 30 30 30 30 30 30 30 30 30 30	$\begin{array}{c} 1.8\%\\ 1.8\%\\ 1.6\%\\ 1.9\%\\ 1.6\%\\ 1.6\%\\ 1.5\%\\ 1.6\%\\ 1.5\%\\ 1.5\%\\ 1.1\%\\ 1.1\%\\ 4.9\%\\ \end{array}$	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.06 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [0.64, -0.10] -0.37 [0.64, -0.10] -0.51 [0.96, -0.07] -0.22 [-0.41, -0.04] -0.22 [-0.41, -0.04] -0.33 [1.43, -0.43] -0.93 [1.43, -0.43] -0.93 [1.43, -0.43] -0.93 [1.43, -0.43] -0.93 [1.44, -0.67] -0.74 [1.20, -0.29] -0.75 [-1.65, -0.18] -0.15 [-0.45, 0.15] -0.15 [-0.45, 0.15] -0.45 [-0.45, 0.38] -0.15 [-0.45, 0.15] -0.44 [-0.45, 0.32]	
1.1.5 Sleep disorders           Sai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Yang YY 2015           'ang WF 2017           'in Y 2018           Chang Zo 2011           Chou JC 2013           'in Y 2018           Stabtod (95% C1)           Heterogeneity: Tau* = 0           'est for overail effect: Z           2.1.6 Hypnotics           Wang Y2 2015           'in Y 2018           Chang Zo 2011           Chou JC 2013           Subtotal (95% C1)           Heterogeneity: Tau* = 0           'ang WY 2015           'in Y 2018           Chang Zo 2011           Jub Zo13           Juky 2015           'ang WY 2015           'ang WY 2015           'ang WY 2015           'ang WY 2015           'ang YY 2018           'they 2017           'ang WY 2015           'ang WY 2015           'ang YZ 2018           'they 2018           'they 2018           'they 2018           'they 2018           'they 2018           'they 2018	1.57 0.7 1.19 0.5 1.17 0.3 0.1 1.13 0.4 1.52 0.5 1.13 0.4 1.52 0.5 1.13 0.4 1.16 0.4 0.867 0.94 0.07; Chi <sup>2</sup> = 5 2.36 (P = C 1.1 0.86 0.77 0.5 0.8 0.83 0.01; Chi <sup>2</sup> = 3 1.4 0.14 1.4 0.14 1.4 0.4 0.8 0.7 1.4 0.14 1.4 0.5 0.8 0.7 1.4 0.14 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8	2 30 2 96 8 30 7 31 3 30 7 31 3 30 7 31 3 30 7 30 5 30 5 30 5 30 5 30 5 30 5 30 5 30 5	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.0\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.57\\ 1.7\\ 2.09\\ 1.543\\ 0.97\\ 1.53\\ 1.68\\ 1.33\\ 1.58\\ 1.345\\ 1.345\\ \end{array}$	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 0.572 1.1 26); F= 0.98 0.774 1.02 0.52 1.1 1.2 26); F= 0.98 0.63 1.07 0.88 0.63 0.68 1.0.78 0.68 1.0.78 0.68 0.63 0.63 0.63 0.64 0.64 0.64 0.64 0.64 0.64 0.64 0.64	95 30 29 30 30 30 30 30 30 30 35 36 36 37 30 30 30 30 30 30 30 30 30 30 30 30 30	$\begin{array}{c} 1.8\%\\ 1.8\%\\ 1.6\%\\ 1.9\%\\ 1.6\%\\ 1.6\%\\ 1.5\%\\ 1.6\%\\ 1.5\%\\ 1.5\%\\ 1.1\%\\ 1.1\%\\ 4.9\%\\ \end{array}$	-0.38 [0.65, 0.21] -0.51 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.39 [-1.43, -0.43] -0.34 [-1.24, -0.68] -0.35 [-0.96, -0.15] -0.36 [-0.38, 0.12] -0.45 [-0.96, -0.15] -0.44 [-0.45, 0.53] -0.44 [-0.45, 0.53] -0.45 [-0.96, -0.07]	
1.1.5 Sleep disorders           Sai WJ 2011           Ju F 2015           JXY 2008           Ren S 2017           Yang YY 2015           'ang WF 2017           'in Y 2018           Chang Zo 2011           Chou JC 2013           'in Y 2018           Stabtod (95% C1)           Heterogeneity: Tau* = 0           'est for overail effect: Z           2.1.6 Hypnotics           Wang Y2 2015           'in Y 2018           Chang Zo 2011           Chou JC 2013           Subtotal (95% C1)           Heterogeneity: Tau* = 0           'ang WY 2015           'in Y 2018           Chang Zo 2011           Jub Zo13           Juky 2015           'ang WY 2015           'ang WY 2015           'ang WY 2015           'ang WY 2015           'ang YY 2018           'they 2017           'ang WY 2015           'ang WY 2015           'ang YZ 2018           'they 2018           'they 2018           'they 2018           'they 2018           'they 2018           'they 2018	1.57 0.7 1.19 0.5 1.17 0.3 0.1 1.13 0.4 1.52 0.5 1.13 0.4 1.52 0.5 1.13 0.4 1.16 0.4 0.867 0.94 0.07; Chi <sup>2</sup> = 5 2.36 (P = C 1.1 0.86 0.77 0.5 0.8 0.83 0.01; Chi <sup>2</sup> = 3 1.4 0.14 1.4 0.14 1.4 0.4 0.8 0.7 1.4 0.14 1.4 0.5 0.8 0.7 1.4 0.14 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8	2 30 2 96 8 30 7 31 3 30 7 31 3 30 7 31 3 30 7 30 5 30 5 30 5 30 5 30 5 30 5 30 5 30 5	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.0\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.57\\ 1.7\\ 2.09\\ 1.543\\ 0.97\\ 1.53\\ 1.68\\ 1.33\\ 1.58\\ 1.345\\ 1.345\\ \end{array}$	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 0.572 1.1 26); F= 0.98 0.774 1.02 0.52 1.1 1.2 0.98 0.774 1.02 0.52 1.1 1 0.98 0.63 1.07 0.88 0.63 0.63 0.63 0.63 0.63 0.64 0.84 0.942 0.54 0.84 0.942 0.942 0.54 0.84 0.942 0.941 0.942 0.940 0.9420 0.942 0.9420 0.9420 0.94200000000000000000	95 30 29 30 30 30 30 30 30 30 35 36 36 37 30 30 30 30 30 30 30 30 30 30 30 30 30	$\begin{array}{c} 1.8\%\\ 1.8\%\\ 1.6\%\\ 1.9\%\\ 1.6\%\\ 1.6\%\\ 1.5\%\\ 1.6\%\\ 1.5\%\\ 1.5\%\\ 1.1\%\\ 1.1\%\\ 4.9\%\\ \end{array}$	-0.38 [0.65, 0.21] -0.51 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.39 [-1.43, -0.43] -0.34 [-1.24, -0.68] -0.35 [-0.96, -0.15] -0.36 [-0.38, 0.12] -0.45 [-0.96, -0.15] -0.44 [-0.45, 0.53] -0.44 [-0.45, 0.53] -0.45 [-0.96, -0.07]	
L1.5 Sleep disorders           3ai WJ 2011           Ju F 2015           JXY 2008           Yang YY 2015           Yang YY 2017           Yang YY 2018           Yang YY 2017           Yang YY 2018           Yang YY 2017           Yang YY 2018           Yang YY 2013           Yang YY 2013           Yang YY 2014           Yang YY 2015           Yang YY 2015           Yang YY 2013           Yuhotati (95% C1)           Heterogeneity: Tau" = 0           Yang YY 2015           Yang YY 2013           JXY 2008           Yang YY 2015           Ya	1.57 0.7 1.19 0.5 1.17 0.3 0.1 1.13 0.4 1.52 0.5 1.13 0.4 1.52 0.5 1.13 0.4 1.16 0.4 0.867 0.94 0.07; Chi <sup>2</sup> = 5 2.36 (P = C 1.1 0.86 0.77 0.5 0.8 0.83 0.01; Chi <sup>2</sup> = 3 1.4 0.14 1.4 0.14 1.4 0.4 0.8 0.7 1.4 0.14 1.4 0.5 0.8 0.7 1.4 0.14 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.4 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 1.5 0.5 0.8 0.7 0.8	2 30 2 96 8 30 7 31 3 30 7 31 3 30 7 30 3 30 5 30 3 35 5 30 3 30 5 30 3 30 5 30 3 30 5 30 3 30 5 30 3 30 5 30 5	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.23\\ 1.5\\ 1.0\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.57\\ 1.7\\ 2.09\\ 1.543\\ 0.97\\ 1.53\\ 1.68\\ 1.33\\ 1.58\\ 1.345\\ 1.345\\ \end{array}$	0.68 0.61 0.18 0.596 0.63 0.66 0.81 0.942 0.572 1.1 26); F= 0.98 0.774 1.02 0.52 1.1 1.2 0.98 0.774 1.02 0.52 1.1 1 0.98 0.63 1.07 0.88 0.63 0.63 0.63 0.63 0.63 0.64 0.84 0.942 0.54 0.84 0.942 0.942 0.54 0.84 0.942 0.941 0.942 0.940 0.9420 0.942 0.9420 0.9420 0.94200000000000000000	95 30 30 30 30 30 30 30 30 30 30 30 30 30	$\begin{array}{c} 1.8\%\\ 1.8\%\\ 1.9\%\\ 1.9\%\\ 1.9\%\\ 1.6\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.1\%\\ 1.5\%\\ 1.1\%\\ 1.1\%\\ 1.1\%\\ 4.9\%\\ 1.2\%\\ 1.2\%\\ 1.2\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 1.5\%\\ 3\%\end{array}$	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.06 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [0.64, -0.10] -0.51 [0.96, -0.07] -0.52 [-0.41, -0.67] -0.52 [-0.41, -0.67] -0.52 [-1.06, -0.18] -0.62 [-1.06, -0.28] -0.7 [-0.39 [-0.62, -0.79] -0.7 [-0.39 [-0.59, -0.79]	
1.1.5 Sieep disorders           Bai WJ 2011           Jul F 2015           JXY 2008           Ren S 2017           Wang YY 2015           Yang YY 2018           Chang ZQ 2011           Chang ZQ 2011           Chang ZQ 2013           Uh Y 2018           Chang ZQ 2011           Chang ZQ 2013           Leterogeneity, Tau*= 0           Teat for overall effect; Z           L1.6 Hypnotics           Vang YY 2015           Thang ZQ 2011           Chou JC 2013           Subtotal (95% CI)           Lietrogeneity, Tau*= 0           Test for overall effect; Z           L1.7 Daytime function           Sal VJ 2011           Liy Y 2015           Yang YY 2016           Liw Y 2018           Yang YC 2011           Howay Z011           Yan		2 30 6 8 30 8 9 30 7 7 31 3 2 30 7 7 30 2 5 30 7 7 30 7 5 30 7 7 30 7 7 30 7 5 30 7 7 30 7 5 30 7 7 30 7 5 30 7 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10 5	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.68\\ 0.97\\ 1.7\\ 1.67\\ 1.23\\ 1.5\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.24\\ 2.07\\ 1.68\\ 1.34\\ 1.58\\ 1.34$	0.68 0.61 0.596 0.63 0.68 0.63 0.66 0.81 0.942 0.774 1.02 0.52 1.1 26); P= 0.98 0.78 0.78 0.78 0.68 1.1 0.88 0.42 0.59 1.1 0.88 0.63 0.63 0.64 0.81 0.942 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59	95 30 29 30 30 30 30 369 95 125 224% 30 30 35 45 30 29 5 30 30 35 45 30 30 35 45 30 30 35 45 30 30 35 24% 45 30 30 35 24% 45 45 30 30 35 24% 95 22% 36 36 36 36 36 36 36 36 36 36 36 36 36	1.8% 1.8% 1.6% 1.6% 1.5% 1.5% 1.5% 1.3% 1.3% 1.3% 1.3% 1.3% 1.3% 1.3% 1.3	-0.38 [0.65, 0.21] -0.51 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.37 [-0.64, -0.10] -0.20 [-0.58, 0.18] -0.51 [-0.96, -0.07] -0.22 [-0.41, -0.04] -0.47 [-0.87, -0.07] -0.39 [-1.43, -0.43] -0.34 [-1.24, -0.68] -0.35 [-0.36, 0.15] -0.36 [-0.38, 0.12] -0.35 [-0.36, -0.07] -0.44 [-0.45, 0.53] -0.44 [-0.45, 0.53] -0.45 [-0.36, -0.07]	
1.5 Sleep disorders           ai WJ 2011           Ju F 2015           JXY 2008           Yen S 2017           Yang YY 2015           'ang WF 2017           In Y 2018           'hang ZO 2011           thou JC 2013           'ubtotal (95% CI)           detrogeneity: Tau# = 0           'est for overall effect. Z           '.1.6 Hypnotics           'vang Y 2015           'in Y 2018           'hang ZO 2011           'hou UC 2013           'ubtotal (95% CI)           eleterogeneity: Tau# = 0           'attotal (95% CI)           eleterogeneity: Tau# = 0           'attotal (95% CI)           eleterogeneity: Tau# = 0           'ang WY 2015           'in Y 2018           'ang WY 2015           'ang WJ 2011           'ubtotal (95% CI)           'ens 2017           'yang W 2017           'in Y 2018           'hang ZO 2011           'hang ZO 2011           'hang ZO 2013           'ubtotal (95% CI)           'eterogeneity: Tau# = 0           'eterogeneity: Tau# = 0           'abutotal (95% CI)           'e	1.57 0.7 1.19 0.5 1.17 0.3 1.13 0.4 1.13 0.4 1.13 0.4 1.14 0.5 0.857 0.94 0.077 Chil <sup>2</sup> 5 1.1 0.80 0.077 Chil <sup>2</sup> 5 1.1 0.80 0.857 0.94 0.077 Chil <sup>2</sup> 5 0.8 0.83 0.01; Chil <sup>2</sup> 3 1.3 0.4 1.3 0.4 1.3 0.4 1.4 0.4 1.3 0.4 1.3 0.4 1.3 0.4 1.3 0.4 1.3 0.4 1.4 0.4 1.3 0.8 0.8 0.7 1.4 0.14 1.3 0.8 0.82 0.7 1.4 0.14 1.54 0.5 0.82 0.7 0.82 0.7 0.82 0.7 1.54 0.5 0.82 0.7 0.82 0.7 0.8 0.7 1.54 0.5 0.82 0.7 0.8 0.7 0.8 0.7 1.54 0.5 0.82 0.7 0.8 0.7 0.8 0.7 1.54 0.5 0.82 0.7 0.8 0.7 0.5 0.8 0.7 0.8 0.7 0.8 0.7 0.8 0.7 0.5 0.8 0.7 0.8 0.7 0.7 0.8 0.7 0.8 0.7 0.8 0.7 0.8 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	2 30 2 96 8 30 8 30 7 31 3 2 30 7 30 7 30 3 37 2 37 2 30 7 30 3 37 2 37 2 37 2 37 2 37 2 37 2 37 2 37	$\begin{array}{c} 1.57\\ 1.68\\ 0.97\\ 1.7\\ 1.68\\ 0.97\\ 1.7\\ 1.67\\ 1.23\\ 1.5\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.24\\ 1.371\\ 1.24\\ 2.07\\ 1.68\\ 1.34\\ 1.58\\ 1.34$	0.68 0.61 0.596 0.63 0.68 0.63 0.66 0.81 0.942 0.774 1.02 0.52 1.1 26); P= 0.98 0.78 0.78 0.78 0.68 1.1 0.88 0.42 0.59 1.1 0.88 0.63 0.63 0.64 0.81 0.942 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59	95 30 29 30 30 30 30 369 95 125 224% 30 30 35 45 30 29 5 30 30 35 45 30 30 35 45 30 30 35 45 30 30 35 24% 45 30 30 35 24% 45 45 30 30 35 24% 95 22% 36 36 36 36 36 36 36 36 36 36 36 36 36	1.8% 1.8% 1.6% 1.6% 1.5% 1.5% 1.5% 1.3% 1.3% 1.3% 1.3% 1.3% 1.3% 1.3% 1.3	-0.38 [0.65, 0.21] -0.51 [0.77, 0.25] 0.06 [0.03, 0.15] -0.37 [0.64, -0.10] 0.29 [-0.03, 0.61] -0.37 [0.64, -0.10] -0.51 [0.96, -0.07] -0.52 [-0.41, -0.67] -0.52 [-0.41, -0.67] -0.52 [-1.06, -0.18] -0.62 [-1.06, -0.28] -0.7 [-0.39 [-0.62, -0.79] -0.7 [-0.39 [-0.59, -0.79]	

Fig. 7: Forest plot of single PSQI score of acupuncture vs. Western medicine in the treatment of insomnia

### **HETEROGENEITY ANALYSIS**

After data processing, sensitivity analysis was conducted on those with high heterogeneity ( $I^2 > 50 \%$ ) and it was speculated that the reasons might be that: The included patients had different courses of disease, ages and genders (for example, only female patients were included for perimenopausal insomnia), so there were individual differences in samples; the included patients had different types of insomnia. Some patients were included in insomnia according to TCM syndromes (such as syndrome of heart-kidney imbalance and syndrome of heart-spleen deficiency), some were included in the primary insomnia, perimenopausal insomnia, senile insomnia and some were included in insomnia regardless of types. Different types of insomnia had different prognosis and outcomes; the included patients were treated in different courses and with different methods. In the experimental groups, some patients were treated by routine acupuncture, some by dialectical acupoint selection and some by other acupuncture methods (such as Tongyuan therapy and Jin tri-points); in the control group, most patients were treated with Estazolam, and some with other Western medicines (such as Stilnox and Eszopiclone) and the dose was not uniform, which might cause different outcomes; The same score used for outcome indicators in the included studies may differ in the influence of subjective and objective factors, such as different understandings of use of the same scale or the interference by subjective evaluation of authors of the literature.

## DISCUSSION

In TCM, insomnia is a kind of disease characterized by frequent failure to get normal sleep. Insomnia is treated based on the principle of regulating vin and yang of Zang-fu organs, mainly by tonifying deficiency and reducing excess. Acupuncture, as a special treatment in TCM, is used to dredging the channel, regulating yin and yang, strengthening body resistance and eliminating evil through the conduction of meridians, collaterals and acupoints, so as to treat the systemic diseases. After years of clinical study, the author has found that acupuncture of Sishencong, Baihui, Houxi, Lieque, Anmian and Gongxue is effective in the clinical treatment of insomnia. Acupuncture of Sishencong<sup>[25]</sup> can nourish heart and tranquilize mind and soothe liver and relieve depression, thus improving the structure of sleep; acupuncture of Baihui<sup>[26]</sup> around which there are abundant blood vessels can treat insomnia. Modern

studies have also confirmed that acupuncture can make patients in a state of qi-blood harmony, peaceful yin and compact yang in the treatment of insomnia<sup>[27,28]</sup>, thus improving the sleep quality of patients. Purpose of this paper is to collect high-quality clinical randomized controlled trials and strictly evaluate and analyze them one by one and then statistically process the data by quantitative synthesis and objectively evaluate them, so as to draw the comprehensive conclusion. The conclusion is drawn from the effective rate and PSQI score of acupuncture *vs.* Western medicine in the treatment of insomnia, which provides clinical evidence-based evidence for acupuncture treatment of insomnia.

Based on the data of literature included in this paper, it can be concluded that the effective rate of acupuncture in the treatment of insomnia was 90.43 % and that of Western medicine was 73.72 %, suggesting that the effective rate of acupuncture was higher than that of Western medicine. In subjective sleep quality, sleep latency, habitual sleep efficiency, sleep disorders, use of hypnotics and daytime dysfunction, the heterogeneity of habitual sleep efficiency and use of hypnotics was low and the results were more stable. The results can provide certain clinical hints, where patients in an urgent need to improve insomnia (such as those affected by long-term insomnia, in poor emotions and of short temper) can be treated by acupuncture to improve their sleep quality and reduce their dependence on hypnotics, so that they can better return to the family and society, improve their compliance and obtain a better treatment outcome.

In addition, there are also some limitations in this study, such as different scoring criteria included and few articles of literature on long term followup. Therefore, international unified standard should be used in the evaluation of insomnia by RCTs and long term follow-up should be added as the outcome observation indicators; TCM scoring criteria should be improved and subjective human factors should be reduced in RCTs of acupuncture to avoid the impact on the authenticity of the results. In this paper, metaanalysis of acupuncture vs. Western medicine in the treatment of insomnia is described, which is instructive to the subsequent clinical treatment, despite the limited quality of literature included in the study. Based on clinical experience, the therapy of acupuncture combined with medicine has a better clinical effect in the treatment of insomnia, compared with a single therapy. At the same time, more large-sample and highquality randomized controlled trials are expected to provide evidence-based medical evidence and further verify the conclusion.

## **Conflict of interests:**

The authors declared no conflicts of interest.

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