Supplementary materials

PRISMA 2009 Checklist

Supplementary Table 1：The PRISMA Checklist for this systematic review and meta-analysis

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	4
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4,5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	4,5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5,6
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5,6
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	5,6

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	5,6
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	5,6
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	6
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	6,7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	12, Supplementary table 1
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	7, figure 2,3,4,5
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	7,8
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	8,9
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	9,10,11
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	11
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	12

Note: Section/topic: represents sections and topics in the manuscript that need to be checked; Checklist Item: represents a detailed description of each topic; Reported on Page: This topic corresponds to the page numbers in the manuscript.

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097 © 2009 Liberati et al. Creative Commons Attribution License.

Supplementary Table 2. Search strategy for Pubmed

Order	The Formula
#1	("depression"[Mesh] OR "depressive disorder"[Mesh]) AND ("hypertension"[Mesh] OR "blood pressure"[Mesh])
#2	(((depression [Text Word]) OR depressive disorder[Text Word]) OR Dysthymic disorder [Text Word])
#3	((((hypertension [Text Word]) OR hypertensive patients[Text Word]) OR high blood pressure [Text Word]) OR blood pressure[Text Word])
#4	#2 AND #3
#5	#1 OR #4
#6	((((((("Systolic blood pressure"[Text Word]) OR "SBP"[Text Word]) OR "diastolic blood pressure"[Text Word]) OR "DBP"[Text Word]) OR "effective rate"[Text Word]) OR "effectiveness"[Text Word])
#7	#5 AND #6
#8	animals [MeSH Terms]
#9	humans [MeSH Terms]
#10	#8 NOT #9
#11	#7 NOT #10
#12	(((((clinical trial[title/abstract]) OR randomized trial[title/abstract]) OR randomized controlled trial[title/abstract]) OR "clinical"[title/abstract]) OR "randomized"[title/abstract])
#13	#11 AND #12

Supplementary Table 3. Basic characteristics of the included trials.

References	**Country**	Age (year)	Sample size (Intervention/Control)	Diagnosis standard	Intervention	Control	Treatment duration	Main outcomes
McClintock HF, et al (2017) [1]	US	60±9.2	29/25	PHQ9	Integrated intervention	Usual Care	12 weeks	Change in SBP and DBP
Bogner HR, et al (2008)[2]	US	58	32/32	CES-D	Integrated intervention	Usual Care	6 weeks	Change in SBP and DBP
Bogner HR, et al (2013) [3]	US	67.1±11	30/30	PHQ9	Integrated intervention	Usual Care	12 weeks	Change in SBP and DBP
Li TT, et al (2013) [4]	China	55	42/43	HAMD	TCA+AD	AD	8 weeks	Change in SBP and DBP, effective rate
Wang FJ, et al (2009) [5]	China	58.6	40/40	SDS	TCA+AD	AD	8 weeks	Change in SBP and DBP, effective rate
Wang AX, et al (2007) [6]	China	62±3	64/62	HAMD	TCA+AD	AD	12 weeks	Change in SBP and DBP
Lai XH, et al (2016) [7]	China	60.39±7.68	48/48	HAMD	TCA+AD	AD	12 weeks	Effective rate
Wang HJ, et al (2009) [8]	China	61	35/30	HAMD	TCA+AD	AD	12 weeks	Change in SBP and DBP, effective rate
Xu TB, et al (2016) [9]	China	53.6±2.5	50/50	HAMD	TCA+AD	AD	4 weeks	Effective rate
Hou M, et al (2015) [10]	China	70.1±8.6	50/50	HAMD	SSRI+AD	AD	8 weeks	Change in SBP and DBP, effective rate
Luo XH, et al (2007) [11]	China	70.86	31/32	HAMD	SSRI+AD	AD	8 weeks/ 4 weeks	Change in SBP and DBP, effective rate
Ma WZ, et al (2006) [12]	China	63±4	43/42	HAMD	SSRI+AD	AD	6 weeks	Change in SBP and DBP
Liu P, et al (2001) [13]	China	65.4±6.7	27/26	SDS	SSRI+AD	AD	10 weeks	Effective rate
Lu ZT, et al (2016) [14]	China	51.3±13.6	40/40	HAMD	SSRI+AD	AD	4 weeks	Change in SBP and DBP
Ma LN, et al (2012) [15]	China	72.5±6.9	31/36	HAMD	SSRI+AD	AD	12 weeks	Change in SBP and DBP
Cai XJ, et al (2006) [16]	China	69.1±1.7	70/68	HAMD	SSRI+AD	AD	12 weeks	Change in SBP and DBP
Li WY, et al (2011) [17]	China	67.9±1.7	43/42	HAMD	SSRI+AD	AD	12 weeks	Effective rate
Jiang T, et al (2011) [18]	China	75.3±3.4	50/50	HAMD	SSRI+AD	AD	8 weeks/	Change in SBP and DBP

							4 weeks	
Pan JY, et al (2010) [19]	China	61.2±8.4	34/34	HAMD	SSRI+AD	AD	12 weeks	Change in SBP and DBP
Song X, et al (2015) [20]	China	78.5±6.6	62/62	HAMD	SSRI+AD	AD	8 weeks	Change in SBP and DBP
Duan S, et al (2009) [21]	China	51.38±9.43	30/30	HAMD	SSRI+AD	AD	8 weeks	Change in SBP and DBP
Chen Q, et al (2012) [22]	China	60.5±8.8	60/60	HAMD	TCA+AD	AD	12 weeks	Change in SBP and DBP, effective rate
Zhang BQ, et al (2016) [23]	China	48.13±11.25	49/49	HAMD	SSRI+AD	AD	4 weeks	Change in SBP and DBP
He ZQ, et al (2018) [24]	China	68.97±7.45	84/84	HAMD	SSRI+AD	AD	4 weeks	Change in SBP and DBP
Li Y, et al (2009) [25]	China	61.8±8.3	53/53	HAMD	SSRI+AD	AD	6 weeks	Change in SBP and DBP, effective rate
Diao ZL, et al (2008) [26]	China	54.4±11.6	40/39	HAMD	SSRI+AD	AD	12 weeks	Change in SBP and DBP
Li HC, et al (2016) [27]	China	77.5±7.7	144/138	HAMD	SSRI+AD	AD	4 weeks	Change in SBP and DBP, effective rate

PHQ9, nine-item Patient Health Questionnaire; CES-D, The Center for Epidemiologic Studies Depression Scale; HAMD, Hamilton Depression Scale; SDS, Self-rating depression scale; TCA, Tricyclic antidepressants; SSRI, Selective Serotonin Reuptake Inhibitor; AD, Antihypertensive drugs (ACEI, ARB, CCB, BB, or diuretics); SBP, Systolic blood pressure; DBP, diastolic blood pressure.

Reference:

[1] McClintock HF, Bogner HR. Incorporating Patients' Social Determinants of Health into Hypertension and Depression Care: A Pilot Randomized Controlled Trial. Community Ment Health J. 2017;53(6):703-710. doi:10.1007/s10597-017-0131-x

[2] Bogner HR, de Vries HF. Integration of depression and hypertension treatment: a pilot, randomized controlled trial. Ann Fam Med. 2008;6(4):295-301. doi:10.1370/afm.843

[3] Bogner HR, de Vries HF, Kaye EM, et al. Pilot trial of a licensed practical nurse intervention for hypertension and depression. Fam Med. 2013;45(5):323-329.

[4] Li TT, Yin CS, Li HQ, et al. A clinical study of the effects of amlodipine combined with flupentixol/melitracen and psychotherapy on essential hypertension in senile patients with mixed anxiety-depressive disorder. Chin J Clin Healthc. 2013;16(06):615-617.

[5] Wang FJ, Xian HJ, Shi X. Effect of deanxit on hypertensive patients with depression and anxiety. Chin J Cardiovase Rehabil Med.2009;18(06):566-568.

[6] Wang AX, Sun Wei. Effect of Daixin on antihypertensive efficacy and quality of life in patients with hypertension complicated with depression.China Prac Med. 2007;2(28):97-98.

[7] Lai XH, Yang PH. Effect of Daixin on antihypertensive efficacy and quality of life in hypertensive patients with depression. Contemporary Medicine.

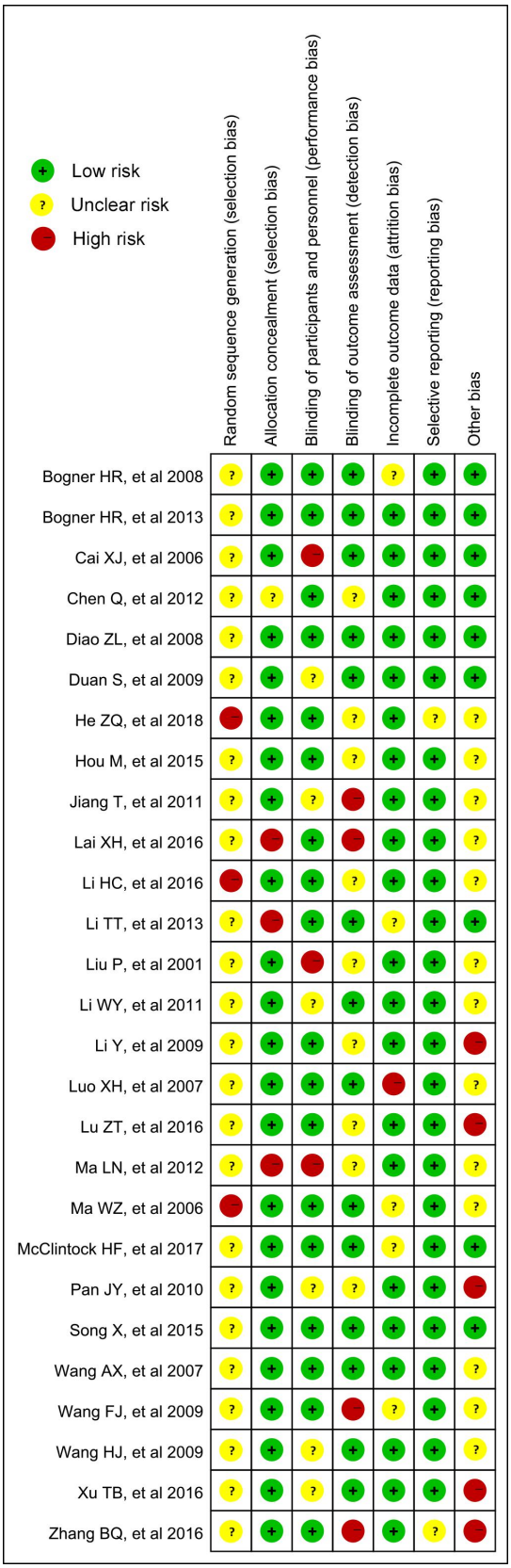
2016; 22(18):129-131.
[8] Wang HJ, Zhang GP, Shao SW. Flupentixol melitracine in the treatment of hypertension with depression. Prevention and treatment of Cardio-Cerebral-Vascular Disease. 2009;9(05):395-396.
[9] Xu TB. Effect of flupentixol melitracine combined with captopril in the treatment of hypertension with depression and anxiety.Contemporary Medicine. 2016;22(12):143-144.
[10] Hou M, Cheng XY, Wang HQ, et al. Clinical study of fluoxetine combined with bebott in the treatment of elderly patients with essential hypertension and depression. Chinese Journal of Practical Nervous Diseases Dec. 2015;18(23):74-76.
[11] Luo XH, Meng WY, Ma Y. Effect of antidepressant treatment on blood pressure of patients with hypertension combined with depression. Shanxi medical. 2007;36(4):439–441.
[12] Ma WZ, Dou CJ, Zhang RZ. Effect of antidepressant therapy on hypotensive effect of hypertension. Clinical Focus. 2006;21(07):477-478.
[13] Liu P. Influence of anti-depression therapy on increasing the effect of hypotensor in hypertensive patients. Chin J Cardiovasc Rehabil Med.2001;10 (03):225-226.
[14] Lu ZD, Wang YY, Wang D. The clinical observation about antidepressant treatment on the blood pressure of patients with hypertension combined depression clinical observation. Anhui Medical and Pharmaceutical Journal. 2016;20(04):764-767.
[15] Ma LN, Feng M, Li Y. Investigation of the influence of antidepression therapy on blood pressure and quality of life in elderly patients both with hypertension and depression. Chin J Clinicians(Electronic Edition). 2012;6(20):6350-6354.
[16] Cai XJ, Bi XP, Zhao Z, et al. The effects of antidepressant treatment on efficacy of antihypertensive therapy in elderly patients with hypertension. Chin J Intem Med. 2006; 45(08):639-641.
[17] Li WY, Ruan LB. The effects of antidepressant treatment on antihypertensive therapy in elderly patients. J Clin Cardiol (China). 2011;27(04):275-277.
[18] Jiang T. Effect of antidepressant therapy on blood pressure level in patients with hypertension.Hubei Journal of TCM. 2011;33(11):29-30.
[19] Pan JY. Effects of paroxetine and psychological intervention on blood pressure level and quality of life in patients with hypertension and depression. China Pharmacist. 2010;13(09):1322-1323.
[20] Song X, Yuan Y, Hu QY. Application value of Setraline in essential hypertension patients with depression. China Medical Herald.2015;12(12):133-136.
[21] Duan S, Xiao J, Zhao SP, et al. Effect of antidepressant and psychological intervention on the quality of life and blood pressure in hypertensive patients with depression. J Cent South Univ (Med Sci). 2009;34(04):313-317.
[22] Chen Q. Efficacy of enalapril combined with flupentixol melitracine in the treatment of hypertension with depression. Chin J Gerontol. 2012;32(21):4790-4791.
[23] Zhang BQ, Wang M.Observation of the efficacy of escitalopine combined with felodipine in the treatment of hypertension complicated with depression. China Modern Doctor. 2016;54(35):93-96.

[24] He ZQ, Chen Y. Analysis of blood pressure changes in elderly patients with hypertension and depression after anti-depressant treatment.China Modern Medicine.2018;25(04):41-43.
[25] Li Y, Deng WG, Wang SY, et al． Effect of the antidepressant treatment to the blood pressure and quality of life of for hypertension patients with depression. IMHGN. 2012;18(14):2009–2012.
[26] Diao ZL, Ge QF, Li HT, et al. Effects of antidepressants on blood pressure and inflammation in patients with essential hypertension and depression. Clinical Medicine of China. 2008;24(12):1236-1237.
[27] Li HC, Li QB, Yang YL, et al. Effect of antidepressant therapy on blood pressure in elderly patients hypertensive patients with depression. Chin J Geriatr Heart Brain Vessel Dis.2016;18(02):143-148.

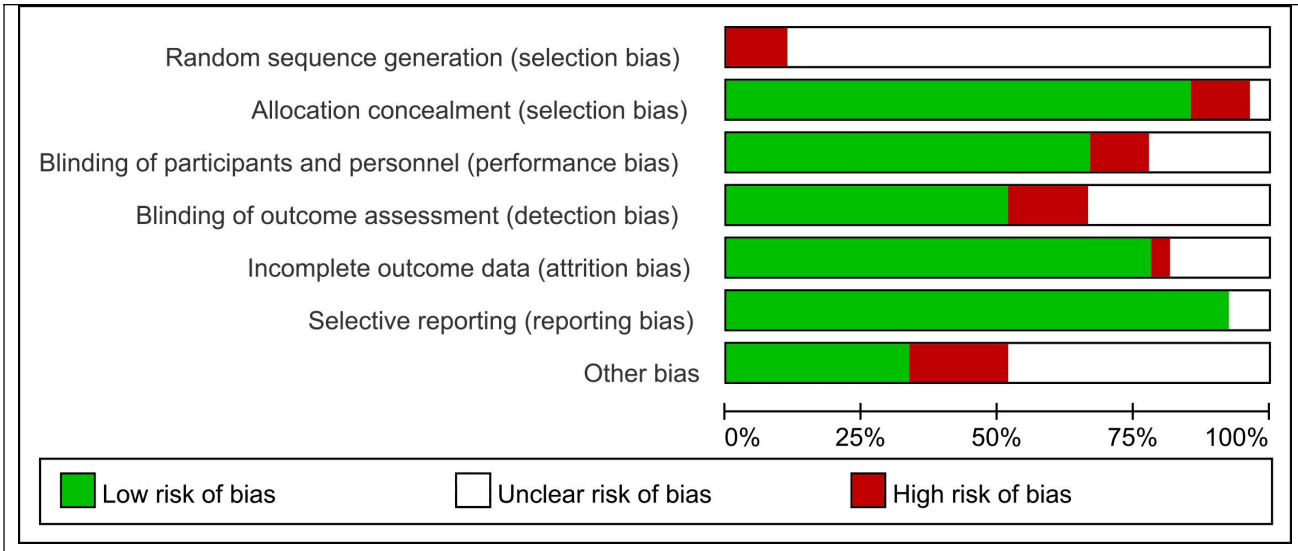
Supplementary Table 4. Begg's rank correlation test and Egger linear regression test for publication bias

	Begg's rank correlation test		Egger linear regression test	
	Z	P value	t	P value
SBP	0.68	0.498	-0.28	0.785
DBP	0.09	0.926	-1.02	0.320
Effective rate	0.89	0.373	1.11	0.294

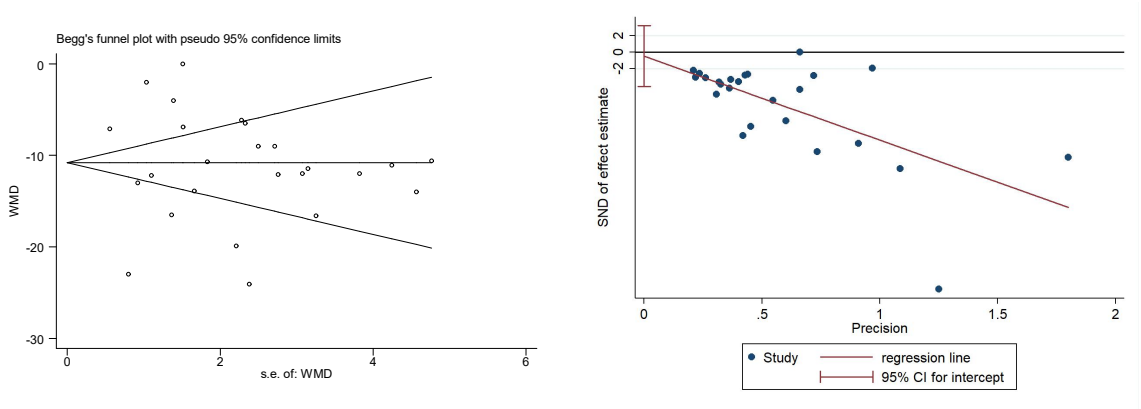
SBP, systolic blood pressure; DBP, diastolic blood pressure.



Supplementary figure1. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

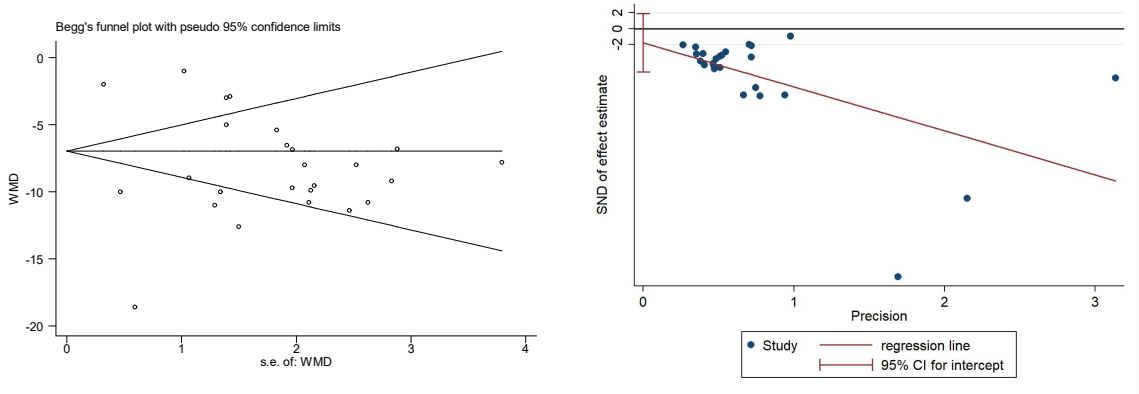


Supplementary figure2. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.



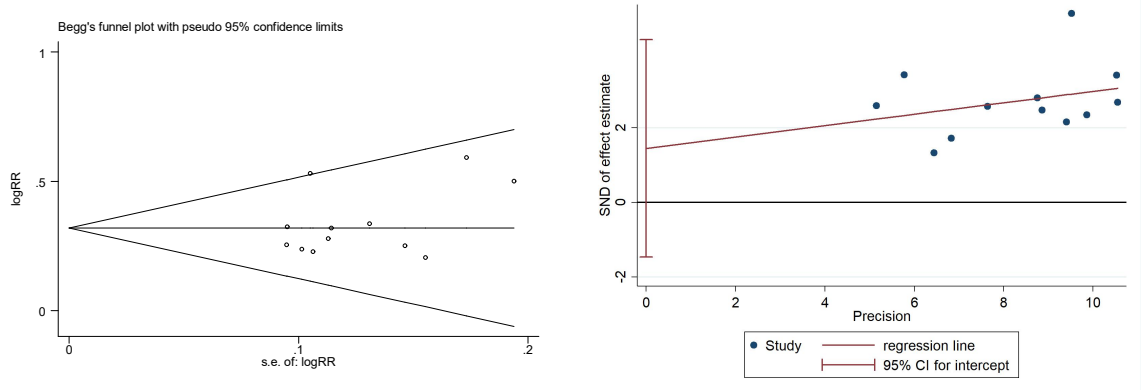
Begg test Egger test

Supplementary figure 3. The Begg and Egger tests for the effect of combination treatment on SBP.



Begg test Egger test

Supplementary figure 4. The Begg and Egger tests for the effect of combination treatment on DBP.



Begg test Egger test

Supplementary figure 5. The Begg and Egger tests for the effect of combination treatment on effectiveness of anti-hypertension.