Appendix A

Summary of the Studies

Study details	**Subjects' characteristics**	**Intervention**	**Type of control group**	**Outcome**	**Aim**
Author (year); Country	Main diagnosis/population; Sample size [Exp = *n*, mean age (range or *SD*), Male, Female] & [Con = *n*, mean age (range or *SD*), Male, Female]	Intervention type; Intervener of acupressure (applied acupoints); Duration, Frequency, Intervention period			
Chan et al. (2017); Hong Kong	Frail older people in community; *N* = 106 [Exp = 54, 76.33 (*SD* = 6.52), M = 18, F = 36] & [Con = 52, 75.90 (*SD* = 7.68), M = 14, F = 38]	AP; Caregivers (HN3, GV24, BL2, TE23, EX-HN5, GB14, SI18, LI20, ST6, ST4, HN24, GB20, GB21, SI11, LI4); 15 min, 4/wk, 12 wk	Received the same treatment after completing the control group activities and assessment	PSQI, Visual Analogue Scale (VAS), WHOQOL-BREF (HK)	Sleep quality, pain, quality of life
Chen (2013); China	Hypertension and sleep disorder patients; *N* = 116 [Exp = 58] & [Con = 58], Age range 74-96, M = 66, F = 50	AP; Nurse (GV23, EX-HN3, ST8, BL2, TE23, EX-HN5, GV20, GB20, GB21, KI1, KI3, SP6, ST36); 20-30 min, 7/wk, 4 wk	Estazolam 2 mg orally at night and conventional care	Spiegel Sleep Inventory (SSI)	Sleep quality

Chen et al. (2016); China	Poor sleep quality patients; *N* = 100 [Exp = 50, 69.89 (*SD* = 10.03)] & [Con = 50, 70.09 (*SD* = 11.23)]	AP; Nurse (EX-HN5, EX-HN22, PC6, HT7, SP6, ST36); 50/acupoint, NR, 8 wk	Explanation of sleep quality information	PSQI	Sleep quality
Kwan et al., 2017; Hong Kong	Nursing home residents with Dementia; *N* = 119 [Exp = 39, 86.9 (*SD* = 6.1), M = 8, F = 31] &[Sham = 41, 85.6 (*SD* = 6.9), M = 12, F = 29] & [Usual care = 39, 87.1 (*SD* = 5.9), M = 7, F = 32]	AP; trained assistants (GV20, HT7, EX-HN3, GB20, PC6) ; 10 min, 10/wk, 2 wk	Sham -These were located on (1) the nasal bone, (2) the olecranon, (3) the styloid process of the ulna, (4) the medial malleolus over the ankle, and (5) the head of the fibula. Usual care- Usual care provided by the residential care homes to manage agitated residents every day	Cohen-Mansfield Agitation Inventory (CMAI); and on salivary cortisol	Agitation
Lai et al.	Nursing home residents; *N* = 62 [Exp =	AP; Specialists (BL10, CV14, KI1,	A massage at locations	PSQI, SF-36	Sleep quality,

(2017); Taiwan	31 (range 65-81), M = 12, F = 19] & [Con = 31 (range 71-81), M = 8, F = 23]	GV20, PC6); 24 min, 3/wk, 8 wk	with no acupoints, which were 10 mm from the true points		quality of life
Lei et al. (2015); China	Hypertensive patients; *N* = 68 [Exp = 34, 71.3 (*SD* = 7.2), M = 19, F = 15] & [Con = 34, 72.8 (*SD* = 6.8), M = 17, F = 17]	AP; self (EX-HN14, GB20, EX-HN5, HT7, PC6, SP6); 40-50/acupoint, 28/wk, 4 wk	Guidance of mental health and education of sleep knowledge	PSQI, MMSE	Sleep quality, cognitive function
Li et al. (2014a); China	Hypertensive patients; *N* = 68 [Exp = 34, 73.3 (*SD* = 7.1), M = 16, F = 18] & [Con = 33, 73.1 (*SD* = 6.8), M = 18, F = 15]	AP; self (EX-HN5, EX-HN22, HT7, PC6, SP6); 50/acupoint, NA, 12 wk	Education regarding sleep quality and counseling	PSQI, MMSE	Sleep quality, cognitive function
Li et al. (2014b); Hong Kong	Residential care home residents; *N* = 90 [Exp = 31, 84.2 (*SD* = 7.29), M = 6, F = 25] & [Placebo = 28, 83.8 (*SD* = 7.19), M = 7, F = 21] & [Con = 31, 86.9 (*SD* = 8.01), M = 7, F = 24]	AA; self (Ear large intestine, rectum, san jiao, spleen, lung, sympathesis, subcortex); NR, NR, 10 days Participants in the experimental group received AA using auricular	Participants in placebo-controlled group received AA using auricular plasters with Semen Vaccariae; and	PAC-SYM, PAC-QOL	Constipation, quality of life

		plasters with magnetic pellets	participants in usual care group received AA using only auricular plasters.		
Liu et al. (2017); China	Constipation patients; *N* = 100 [Exp = 50, 69.18 (*SD* = 5.8), M = 21, F = 29] & [Con = 50, 68.88 (*SD* = 5.4), M = 22, F = 28]	AP; NR (CV4, CV12, ST25), 30/acupoint, 21/wk, 4 wk	Bisacodyl 5 mg once a day orally	Number of bowel movements per week	Constipation
Lu et al. (2013); Taiwan	Psychogeriatric inpatients; *N* = 60 [Exp = 30, 71.13 (*SD* = 3.65), M = 19, F = 11] & [Con = 30, 68.07 (*SD* = 2.18), M = 12, F = 18]	AP; Nurse (HT7, KI1, PC6); 9 min, 7/wk, 4 wk	Standard medical care	PSQI	Sleep quality
Mo et al. (2015); China	Hip fracture complicated with constipation; *N* = 133 [Exp = 66, 81.6 (*SD* = 8.2), M = 21, F = 45] & [Con = 67, 81.2 (*SD* = 8.3), M = 23, F = 44]	AP; Nurse (ST25, CV6, CV12, ST37); 30/acupoint, 5/wk, 1 wk	Conventional care	Successful bowel movement	Constipation

Rodríguez-Mansilla et al. (2015); Spain	Dementia institutionalized in residential homes; *N* = 110 [Exp (AA) = 40] & [Exp (Massage therapy) = 35] & [Con = 35]	AA; a qualified acupuncturist (Ear Shenmen, Myorelaxant, Xin Heart); NR, NR, 12 wk	MT: massage therapy Con: continued with their routine activities	Doloplus-2 scale, Cornell Scale for depression in dementia, Campbell scale	Pain, anxiety, depression
Sun et al. (2015); China	Community older adults with mild cognitive dysfunction; *N* = 76 [Exp = 38, 70.8 (*SD* = 6.5), M = 12, F = 26] & [Con = 38, 70.3 (*SD* = 3.9), M = 10, F = 28]	AP; self (EX-HN5, GV20, EX-HN1, GV24, GB20); 15-20 min, 3/day, 24 wk	Health education	MMSE	Cognitive function
Wan et al. (2017); China	Community individuals with Dementia; *N* = 80 [Exp = 42, 77.56 (*SD* = 6.06), M = 14, F = 38] & [Con = 38, 77.44 (*SD* = 6.33), M = 12, F = 26]	AP; self (EX-HN 5, GV20, EX-HN1, GV24, GB20); 15 min, 2/d, 24 wk	Conventional care	MMSE, QOL-AD	Cognitive function, quality of life
Wu (2012); China	Patients with musculoskeletal conditions or orthopedic trauma; *N* =	AP; NR (CV12, CV4, ST25, ST 36); 20 min, 2/d, 3 days	Health education	Successful bowel movements in 72	Constipation

	160 [Exp = 84, 76.2, M = 36, F = 48] & [Con = 76, 77, M = 39, F = 37]			hours	
Yeh et al. (2014); USA	Chronic low back pain; *N* = 37 [Exp = 19, 70.6 (*SD* = 4.67), M = 4, F = 15] & [Sham = 18, 76.7 (*SD* = 7), M = 7, F = 11]	AA; self (Ear shenmen, sympathetic, nervous subcortex, active points corresponding to chronic low back pain); 3 min, 3/d, 4 wk	Sham APA, on each ear at least 3 times a day for 3 minutes each time / Ear stomach, mouth, duodenum, and eye acupoints.	Worst pain (BPI-sf)	Pain
Zeng et al. (2016); China	Impaired sleep quality; *N* = 82 [Exp = 42, 70.07 (*SD* = 7.42), M = 15, F = 27] & [Con = 40, 70.78 (*SD* = 7.26), M = 9, F = 31]	AP; self (EX-HN22, PC6, HT7, SP6); 30 min, 2/d, 12 months	Sleep health instructions	PSQI, MMSE	Sleep quality, cognitive function
Zhou (2014); China	Patients who underwent hernia repair surgery; *N* = 100 [Exp = 50, 67.46] & [Con = 50, 66.86]	AP + conventional post- surgery care; NR (BL25, ST25, ST 36, ST37);12 min, 3/d, 3 days	Conventional post-surgery care	Patients' primary complaint is bloating; assessed by first instance of flatulence	Flatulence

Note. AA: Auricular acupressure; AP: Acupressure; MMSE: Mini-Mental State Examination; NA: Not available NR: Not reported; SF-36: 36-Item Short Form Health Survey; PAC-SYM: Patient Assessment of Constipation—Symptom Questionnaire; PAC-QOL: Patient Assessment of Constipation—Quality of Life; PSQI: Pittsburgh Sleep Quality Index; BPI-sf: Brief Pain Inventory short form; QOL-AD: Quality of Life in Alzheimer's Disease; WHOQOL-BREF (HK): The Hong Kong Chinese version of the WHO Quality of Life-BRE

Appendix B

Systematic Review Protocol

Title:

Systematic Review and Meta-Analysis on Using Acupressure to Promote the Health of Older Adults

Review question(s)

What is the effect of acupressure for health promotion of older adults?

Search strategy

Studies published between 2012 and 2017 were searched for in the electronic databases of Medline, PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsycINFO, ProQuest Health & Medical Complete, Cochrane Library, Embase, Web of Science, Allied and Complementary Medicine Database (AMED), Chinese Electronic Periodical Services (CEPS), and WANFANG DATA. The search keywords were acupressure (or acupress*, shiatsu, Zhi Ya, acupuncture points, acupoints, acupoint, acupoint*) and aged (or aging, elder, elderly, geriatric, or older adults, senior, elders, geriatr*, older person*, older patient*, older patient*, older women, old women, older men, old men, old adult*, older adult*, older individual, older individuals, old people, oldest old, Nonagenarians, Nonagenarian, Octogenarians, Octogenarian, Centenarians, Centenarian, septuagenarian, septuagenarians, older population, aging population, geront*, old-aged, old-age).

Inclusion criteria:

The pre-specified inclusion criteria were:

- Studies that adopted acupressure as the primary intervention.
- Studies whose participants were older adults.

- Studies that were randomized clinical trials.

Exclusion criteria:

The exclusion criteria were:

- Studies that were case reports.
- Studies written in a language other than Chinese or English.
- Studies in which other treatment methods were used as the intervention in addition to acupressure and the sole effect of the acupressure could not be identified.

Participants/Population of interest

Respondents must be older adults.

Outcome(s)

The relation between acupressure and other variables.

Quality assessment:

Two reviewers trained in empirical research and traditional Chinese medicine independently evaluated the full text of potentially eligible studies. Inclusion of studies in this systematic review was determined by the agreement of both reviewers. Disagreements were resolved through discussion and consensus in the presence of a third reviewer. Prior to the meta-analysis, the Modified Jadad Scale was used to assess the quality of the potentially eligible studies identified by the two reviewers. Each domain is given a value of 1 point, and the total score ranges from 0 to 8; a higher score represents a higher research quality. Scores of 0-3 are considered having poor research quality and 4-8 suggest a high research quality. Therefore, studies that were scored 4 or higher were included in the present analysis.

Data extraction:

Data extracted comprised: Study details (author, year, country), setting (location of study), subjects' characteristics (main diagnosis/population; sample size), intervention (intervention type, intervener of acupressure, applied acupoints, duration, frequency, intervention period), type of control group, outcome, aim.

Language

Chinese or English

Appendix C PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Title page
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.	p.1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	pp. 2-4
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	p. 4
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.	p.5, Appendix B
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.	pp. 4-5, Fig 1, Table 1
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.	p. 4, Fig 1, Appendix C
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix C
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).	pp. 4-5, Fig 1
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.	pp. 4-5, Fig 1
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	pp. 4-5, Fig 1
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.	pp. 5-6
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	pp. 5-6
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of	pp. 5-6

Appendix C PRISMA 2009 Checklist

		consistency (e.g., I^2) for each meta−analysis.	

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).	pp. 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.	pp. 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.	Fig 1
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.	pp. 6-7, Appendix A
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).	pp. 7-11
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.	pp. 7-11, Table 2
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	pp. 7-11, Table 2
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	pp. 7-11
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	pp. 7-11
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).	pp. 11-15
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).	p. 15
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	pp. 15-16
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.	Title page

Appendix C PRISMA 2009 Checklist

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

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