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An observational study of acupuncture and complementary treatments for major depression: Case series from a preliminary study of proposed collaborative care model



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ABSTRACT

Background: Major depressive disorder is identified as a mood disorder characterized by episodically recurring and potentially life-threatening negative symptoms. It is currently important for study, as it involves high morbidity, mortality and prevalence, as well as unsatisfactory treatment results.

Aim: Establish an outpatient model from an integrative approach promoting the diversified development of traditional Chinese and Western medicine cooperation, leading to a holistic intervention for patients with depression.

Experimental procedure: Fifteen participants with moderate to severe depression were followed up for eight weeks in the Acupuncture Department of the China Medical University Hospital in Taichung, Taiwan, under a collaborative outpatient model that combined Western psychiatry and traditional Chinese medicine (TCM). Interdisciplinary Intervention included manual acupuncture twice a week (16 sessions), tai chi, yoga meditation, and nutritional assessment. Symptomatology was measured with primary outcomes (self-reporting via questionnaires) and secondary outcomes (heart rate variability [HRV] and blood samples to measure inflammation via high-sensitivity C-reactive protein [hs-CRP]).

Results: The response rate was 80% (12/15 participants), with a statistically and clinically significant decrease in depression severity according to the 21-question Hamilton depression rating scale (HDRS₂₁) ($p < 0.001$), the Beck Depression Inventory (BDI) ($p < 0.003$), and quality of life (QoL) questionnaires ($p < 0.002$). We found body constitution heterogeneity in the participants with major depressive disorder (MDD), predominantly blood stagnation and Qi stagnation (in 70% of participants).

Conclusion: An interdisciplinary outpatient treatment method of complementary therapies can be applied successfully with pharmacological treatment in clinical practice to reduce depression symptomatology.

Section: Physical/Mental practices.

Taxonomy: Major Depressive Disorder, Collaborative healthcare Treatment, Observational study.

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Abbreviation: Major Depression Disorder, MDD; Body constitution, BC; CHR, Collaborative Healthcare Model; World Health Organization, WHO.

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1. Introduction

Depression is one of the leading causes of disability in the world, the main characteristics of which are low mood and anhedonia, and it may include sleep architecture disturbance, nutritional state impairment, chronic fatigue, and disrupted social interactions.¹ MDD has a complex physiopathology (it is a psycho-immune-endocrine disorder) and can have many comorbidities²; it is also

considered a life-threatening disease, as 10–15% of patients with depression die from suicide, and 90% of suicides are related to a depressed mood.³ The lifetime prevalence in adults is estimated at 12%⁴, with a continuously increasing rate⁵ MDD may become the second most prevalent global burden of disease by 2030, according to the World Health Organization (WHO).⁶ This dynamic is reflected in Taiwan's epidemiology, where the prevalence doubled between 1990 and 2010, and the rate of depression in the population is nearly 25%.⁷

There are many challenges in treating depression, which also impact epidemiology, as available treatments are less than satisfactory (only 40% of patients respond to treatment⁸), and one of the main complaints about medications is intolerable side effects.⁹ For this reason, we wanted to create an outpatient model using an integrated approach and a multidisciplinary understanding of human physiology that incorporates multiple medical sciences and a teaching mechanism for patients.

We considered the novelty of our study as there is a gap in the literature regarding an integrated treatment method with a multitarget mechanism that successfully can be translated into clinical practice, as well as the use of CCMQ (constitution Chinese medicine Questionnaire) as a tool for personalized treatment in the psychiatric field.

We present a case series based on CARE guidelines¹⁰ of 15 participants who were involved in a diversified and integrated treatment created to evaluate the effectiveness of a multidisciplinary treatment to decrease symptoms and improve health and quality of life.

2. Materials and methods

2.1. Participants

Participants included in the study were between 18 and 65 years old and had a diagnosis of major depressive disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (diagnosis codes 296.21–296.30, 300.4). The participants all had moderate cognitive impairment (21-item Hamilton depression rating [HAM-D 21] ≥ 14 points). Patients with other mental diagnoses (including substance abuse), serious suicidal ideation, the antecedent of taking antipsychotic or anti-epileptic drugs in the last six months, or severe medical pathologies (cerebral, renal, cardiac, hepatic diseases) were excluded.

Eighteen patients who met the criteria were recruited from the Ambulatory Psychiatric Department of Western Medicine and the Traditional Chinese Medicine Department of China Medical University Hospital in Taichung, Taiwan and were included in the study after signing the informed consent. The protocol registration number IRB is CMUH109-REC3-041; trial registration number NCT04469608; supported by the Department of Chinese Medicine and Pharmacy, Ministry of Health and Welfare (M09G1025). And The participants underwent a Western psychiatric examination and then were examined using four diagnostic methods of Chinese medicine: listening, inspection, inquiring and palpation (Fig. 1).

2.2. Evaluation

Response to treatment was evaluated by comparing data collected at baseline, two months after the treatment began (week 8), and one week after treatment concluded (Week 9). The main outcomes were a reduction in depression severity assessed by self-reporting on questionnaires. These included the HAM-D 21¹¹ and the Beck Depression Inventory (BDI).¹² Sleep disruption was evaluated using the Pittsburgh Sleep Quality Scale (PSQS),¹³ and the Quality of Life Scale (QOLS)¹⁴ instrument screened for quality of life

perception.¹⁵ The Constitution in Chinese Medicine Questionnaire (CCMQ)¹⁶ was used to determine constitution imbalance based on traditional Chinese medicine (TCM) theory.

Heart rate variability (HRV) was tested twice: once at baseline and once at week 8, each time for about 2 min. This was a non-invasive method of obtaining information about the body's autonomic nervous system. We used a handheld HRV analyzer (pressing the thumb and index finger). Additionally, blood sample analysis was performed with about 15 ml each time, evaluating white blood cell (WBC) count with differential, liver function (AST, ALT), kidney function (blood urea nitrogen [BUN] and creatinine), and inflammation markers (high sensitivity C-reactive protein [hs-CRP]).

2.3. Intervention

Our outpatient model was based on multidisciplinary team cooperation among complementary medicines. All participants continued Western psychiatric treatment while they underwent an eight-week outpatient clinic program with integrated treatment consisting of four main interventions: acupuncture, nutrition education, acupressure instruction, and movement meditation (Table 1).

2.3.1. Acupuncture

The acupuncture protocol was based on standards for reporting interventions in clinical trials of acupuncture (STRICTA) guidelines.¹⁷ Traditional acupuncture treatment with 0.35 mm \times 25 mm filiform needles was performed two times per week for 20 min in each session for a total of eight weeks, with an interval of more than 48 h between each session. All participants received scalp acupuncture at eight points following TCM standards (*Baihui*, *Sishencong* (EX-HN1), *Yin Tang* (Ext-2), and *Faji*), and individualized acupoints were selected along the 12 meridians according to practitioner experience and participant constitution. Needle manipulation was allowed until the “de-Qi” sensation was determined by the practitioner and participant. The intervention was carried out by a physician-certified acupuncturist with eight years of work experience.

2.3.2. Nutritional assessment

Each participant received personalized nutritional guidance and dietary advice during the first week of enrollment from a nutritionist in a 30-min session, followed by Chinese constitutional theory and patient needs. The intervention also included goal setting and motivational interviews to support adherence to the recommended diet. Participants received a food hamper that provided examples of serving sizes, a list of recommended foods and the main components for meal plans.

2.3.3. Acupressure

Based on the patient's main constitution according to the CCMQ, eight possible groups of points were set according to meridian theory and acupoint indications. Participants learned to identify and locate these points for daily self-care massage (Table 2).

2.3.4. Tai chi, mindfulness and yoga

Movement meditation was performed during weekly 1-h sessions of tai chi taught by a physician, and once a month, mindfulness, breathing meditation, and yoga were taught by a psychologist. Each class was 1 h long. A video recording of instruction was provided to the class to practice at home. A weekly register was asked to follow up on the outpatient adherence.

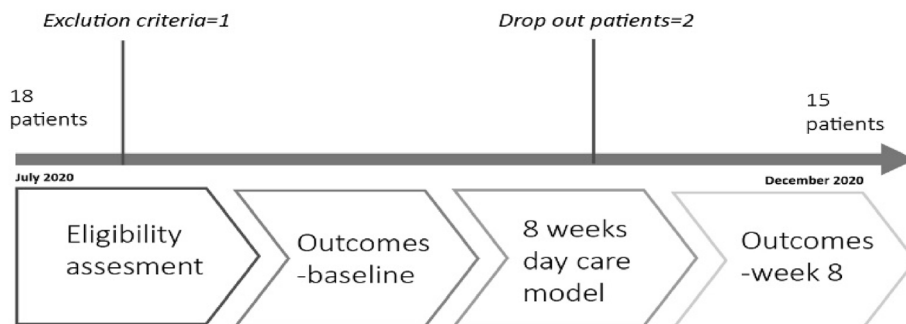


Fig. 1. 8 weeks collaborative model Timeline.

Table 1

Eight week long Collaborative healthcare model schedule, describing frequency of intervention. Acupuncture 2 times per week. Qi cong 1 time per week. Yoga and mindfulness once a month. Acupression and nutritional assessment at the beginning of the treatment.

Collaborative model Schedule								
	W1	W2	W3	W4	W5	W6	W7	W8
Acupuncture	●●	●●	●●	●●	●●	●●	●●	●●
Nutritional assesment	●							
Acupressure	●							
Qi cong		●	●	●	●	●	●	●
Yoga	●				●			
Mindfulness	●				●			

2.4. Data analysis

Statistical analysis data obtained in this study were analyzed using the SPSS software, version 20.0. Descriptive statistics were used for the calculation of the data, min, max, and Mean. Intra-group comparison of data with normal distribution was made by using paired t-test. And for the data with non-normal distribution Wilcoxon rank-sum test.

3. Results

The mean age of the participants was 40 years, and 72% of the participants were women. The mean severity according to HAM-D 21 was 21 ± 5. The average number of years since depression was diagnosed was 7 ± 3 years, and 80% were undergoing antidepressant medication prescribed by the Department of Psychiatry. Fifteen of the original 18 participants completed treatment; two abandoned the study for personal reasons, and one patient was excluded based on inclusion criteria. No adverse effects were registered during treatment. (Table 3).

HAM-D, BDI and QOLS showed a downward trend from the baseline to one week after treatment concluded (Table 4). There were significant differences among the HAM-D, BDI and QOLS

Table 2

Possible groups of points for daily self-care massage set according to acupoint indications and body constitution (CCMQ).

Acupression points for self-care massage	
Constitution	Acupression points
Qi deficiency	St36(Zusanli), Cv6 (Qi hai), Cv12 (Zhong guan)
Yin deficiency	Sp 6 (Sanyinyao), Kd 3(Taixi), Kd 7 (Fuliu)
Yang Deficiency	CV-4 (Guanyuan),St 36 (Zusanli),Cv12 (Zhong guan)
Heat-wetness	LV 11(qu chi), Bl 40 (weizhong), Li4 (Hegu)
Blood stagnation	GB 34 (Yanglingquan), Cv6 (Qi hai), Pc6 (Neiguan)
Phlegm	St 40 (felong), Pc5 (Jianshi), Sj 10 (Tianjing)
Qi stagnation	Liv 3 (Taichong), Li4 (Hegu), Cv6 (Qi hai)
Special diathesis	St36(Zusanli), LV 11(qu chi), Li 4 (Hegu)

instruments. The PSQS instrument showed no significant changes in sleep quality among the participants.

According to the CCMQ, there was a heterogeneous distribution between constitutions. The main constitution (highest score) was Qi stagnation, followed by blood stagnation. These were also calculated and analyzed, as a higher score reflects a greater imbalance (except for gentleness) (Fig. 2).

Blood sample results showed no differences between baseline and one week post-treatment (Table 5). HRV results showed decreased baseline values of high frequency (HF), low frequency (LF), and LF/HF ratio variables, with no significant change after treatment (see Table 6).

4. Discussion

The complex nosogenesis of depression as a condition of multifactorial causation due to multisystem abnormalities creates limitations in primary treatment. An integrative and multidisciplinary medical intervention is necessary as a pathway for understanding human physiology according to the different spheres: mental, physical, emotional and sociocultural. Our outpatient model included two main branches: Western medicine and traditional Chinese medicine. The response rate was 80% (12/15

Table 3

Patients with depression Baseline Characteristics N = 18, HAMD-21 Hamilton depression scale; BDI, Beck Depression Inventory scale; PSQI, Pittsburgh Sleep Quality Scale, QOLS, Quality of life scale.

Patients with depression Baseline Characteristics N = 18	
Characteristics	
Age (years, mean ± SD)	40 ± 11.10
Gender	
Male (n, %)	(5, 27.7%)
Female (n, %)	(13, 72.3%)
BMI Body Mass Index (kg/m2, mean ± SD)	23.6 ± 4
MDD history (years, mean ± SD)	7.12 ± 8.54
HAMD-21 (mean score ± SD)	21 ± 5.1
BDI-II (mean score ± SD)	29 ± 9.6
Pittsburgh (mean score ± SD)	12.9 ± 3.7
Qol (mean score ± SD)	41.4 ± 6.9
Main Constitution(CCMQ, mean score ± SD)	
Blood stagnation	(3, 16.6%)
Qi stagnation	(10, 55.5%)
Wetness heat	(1, 5.5%)
Qi deficiency	(2, 11.1%)
Phlegm-wetness	(1, 5.5%)
Gentleness	(2, 11.1%)
Taking only prescribed antidepressants (n, %)	(4, 20%)
Taking only prescribed TCM herbal medicine (n, %)	(2, 13.3%)
Taking combine TCM and antidepressants (n, %)	(12, 60%)

Table 4

Change in Symptom severity of MDD patients that before and after 8 weeks of treatment N = 15; HAMD-21 Hamilton depression scale; BDI, Beck Depression Inventory scale; PSQI, Pittsburgh Sleep Quality Scale, QOLS, Quality of life scale.

Variable	Start of treatment period Mean (standard deviation)			Difference Mean(SD)	T value	P value
	Baseline Mean(SD)	8 weeks Mean(SD)	9 weeks Mean(SD)			
HAMD-21	19.5 (4.89)	11.26 (5.77)	11 (5.61)	8.53 (6.06)	5.45	<0.001
BDI	28.46 (10.3)	18.13 (12.3)	18.13 (11.1)	10.33 (10)	3.99	0.0014
PSQI	12.1 (3.73)	10.13 (3.99)	10.13 (3.94)	2.00 (3.6)	2.11	0.0530
QOLS	42.97 (6.81)	49.39 (9.4)	48.935 (8.28)	-5.95 (5.39)	-4.28	0.0008

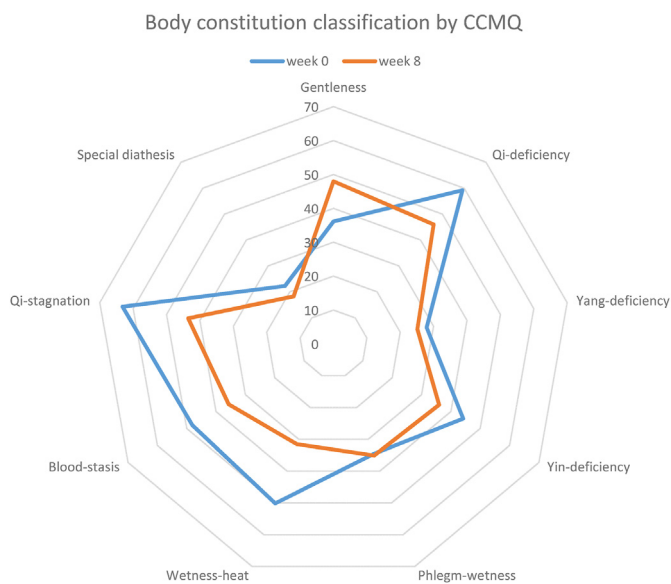


Fig. 2. CCMQ constitutions means comparison at baseline and after treatment N = 15, Threshold 40 points. It was observed a significant mean change in Qi-deficiency 12.93 (17.6SD, p < 0.01); yin-deficiency 7.8 (10.46SD, p < 0.01); Wetness-heat 18.6 (22.05SD, p < 0.006); Blood-stasis 12.62 (19.7SD, p < 0.002); qi stagnation 19.73 (31.8SD p < 0.03). As well of a significant increase of Gentleness constitution 11.867 (13.9SD, p < 0.005).

participants) according to HAM-D 21, with a significant difference in response rates for the self-rated scales of BDI and QOLS. Of the 12 participants, three experienced remission and nine had reductions in more than 50% of their symptoms. These outcomes correlate to meta-analysis report rates, in which the success of the synergistic treatments of acupuncture and antidepressants range from 18% to 100% (mean of 76.8%), compared with 4.2%–93.6% (mean of 50.83%) with antidepressants alone.¹⁸

We used acupuncture as part of traditional Chinese medicine, which has been widely studied and shown to be safe and effective for symptoms of depression. Among mental health conditions, depression has the highest evidence-based acupuncture effects in quality studies. Decreases in severity compared to placebo have been documented¹⁹, with even more significant effects when combined with Western medicine²⁰ as it decreases antidepressant dosage requirements and, therefore, side effects.^{21–23} In specific phenotypes, such as women in perimenopause and menopause, it is a viable alternative for reducing symptoms.²⁴ Additionally, Nutritional assessment (with solid epidemiological evidence that poor nutrition leads to depression^{25–27}) and movement meditation based on the benefits of mindfulness and Qigong^{28,29} practice were included in the collaborative intervention model (Fig. 3).

According to Chinese medicine theory, acupuncture regulates the Shen -神 (spirit) by fixing the imbalance between internal organs, Qi and blood, and clearing the meridians and blood stasis—all of which leads to emotional stability. Also, the physiology behind its mechanism of action has resulted in neurotransmitter modulation,^{30–32} inhibition of the tryptophan-Kynurenine pathway,³³ reduced cortisol and ACTH levels^{31,34–36} and regulation of the

Table 5

Blood sample results comparison means before and after treatment in depressed patients N = 15. WBC (White blood cells) RBC (red blood cells) Hb (Hemoglobine), GOT (glutamic oxaloacetic transaminase) GPT (glutamic pyruvic transaminase) BUN (blood urea nitrogen), hsCRP (high-sensitivity C-reactive protein).

Variable	Start of treatment period Mean (standard deviation)		Difference Mean(SD)	T value	P value
	Baseline Mean(SD)	8 weeks Mean(SD)			
WBC u/l	5.9733 (1.7746)	5.7933 (1.4310)	0.1800 (1.1845)	0.59	0.5656
RBC u/l	4.6640 (0.4620)	4.5853 (0.4047)	0.0787 (0.2232)	1.36	0.1938
Hb g/dl	13.9800 (1.2514)	13.1533 (2.9377)	0.8267 (2.7868)	1.15	0.2699
Platelet u/l	237.8 (80.1779)	254.1 (44.9388)	-16.2267 (64.7103)	-0.97	0.3479
GOT u/l	20.7333 (7.3335)	20.7333 (11.9132)	0 (8.9123)	0	1
GPT u/l	24.4 (18.0665)	22.9333 (21.7041)	1.4667 (16.0395)	0.35	0.7285
BUN mg/dL	14.9333 (3.7123)	15.8 (3.9316)	-0.8667 (2.8752)	-1.17	0.2625
Creatinine mg/dL	0.7660 (0.1346)	0.7827 (0.1496)	-0.0167 (0.0478)	-1.35	0.1980
hsCRP mg/L	0.1420 (0.1361)	0.1153 (0.1474)	0.0267 (0.0475)	2.18	0.0472

Table 6

Heart Rate before and after 8 weeks of treatment N = 15. HR, heart rate; SD standard deviation; VL, very low frequency; LF, low frequency; HF, High frequency.

Variable	Start of treatment period Mean (standard deviation)			T value	P value
	Baseline Mean(SD)	8 weeks Mean(SD)	Difference Mean(SD)		
HR (bpm)	76.37 (13.22)	75.6067 (8.54)	0.7667 (12.23)	0.24	0.8118
SD ms ²	32.14 (9.01)	33.82 (16.71)	-1.6800 (16.95)	-0.38	0.7069
VL ms ²	5.88 (0.63)	5.3867 (1.02)	0.4933 (1.39)	1.37	0.1936
LF ms ²	53.54 (15.19)	50 (19.01)	3.5400 (24.98)	0.55	0.5918
HF ms ²	4.65 (1.108)	7.24 (9.37)	-2.5867 (9.41)	-1.06	0.3054

limbic system and subcortical brain structure network shown on functional MRI (fMRI).^{37–39}

In traditional Chinese medicine, constitution and pattern differentiation are the core for diagnosis and treatment.⁴⁰ In our outpatient model, we used a CCMQ questionnaire. To our knowledge, no other study has used this questionnaire for participants with depression who underwent acupuncture. We found heterogeneity in the body constitution distributions, with blood and Qi stagnation as the main body constitutions in 70% of the participants. Dominant imbalanced body constitution was used to guide holistic intervention and acupuncture treatment (acupoint selection). This has shown how the CCMQ instrument can duplicate physical examination findings associated with indices such as

tongue image, acoustic sound, and pulse wave.⁴¹ After treatment, body constitution (BC) showed an increase in gentleness, which is associated with a better quality/healthy life.⁴² Our results could indicate that an integrated intervention can modify abnormal body constitutions so they can become “healthy” body constitutions and, at the same time, improve the underlying pathological condition. Future research in depression endophenotypes and BC/pattern differentiation association can be a doorway to an integrated medicine-directed treatment that can lead to more effective personalized interventions in the mental health field.

Finally, collaborative health therapy acknowledges that depression is a multidimensional condition and that pharmacological treatment alone may only target a facet of MDD, allowing other factors to persist. Studies have shown how collaborative models with a multicomponent target (biological, psychological and sociocultural) improve depression symptoms with long-term effects⁴³; they also control comorbidities⁴⁴ and are more cost-effective.⁴⁵ Our outpatient model recognizes the benefits of additional evidence-based complementary therapies^{43–45} and opens a door for the diversified development of traditional Chinese medicine in clinical practice along with interprofessional communication and care coordination.

5. Limitations

One of our most significant limitations was the lack of a control group. Additionally, we found difficulty in measuring adherence to the assessment recommendations: nutrition, massage and daily practice of movement meditation. It is difficult to assure outpatient practice. During each medical appointment, doubts were resolved, and adherence was checked. Our study focused on the effectiveness of an integrated intervention, so all participants were followed by psychiatric medical care. However, we did not monitor medication compliance or psychopharmacology efficacy. Finally, we recommend a longer follow-up of participants to evaluate adherence to healthy lifestyle development, continuity and relapsing rate.

6. Conclusion

An integrated outpatient treatment method of Chinese and Western medicine, including acupuncture, nutrition, mind training, and physical activity, can be combined with pharmacological treatment effectively and could reduce depression symptoms when applied successfully in clinical practice. As a preliminary study, future research is needed in multitarget treatments to confirm the implication of this network medicine model for MDD patients; the confirmation of our findings can lead to patient-centralize treatments, thus improving recovery outcomes.

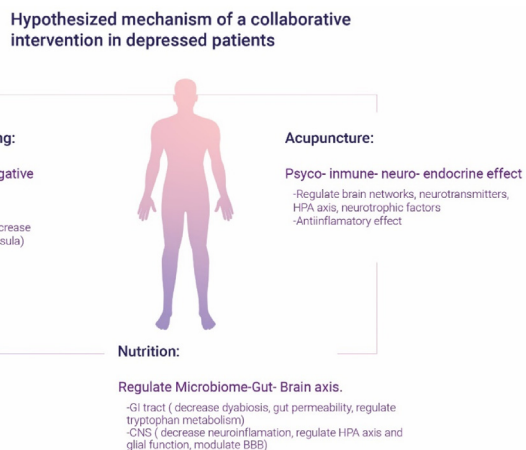


Fig. 3. Mechanism of action of multitarget integrated treatment for depressed patients: GI tract: gastrointestinal tract, CNS: central nervous system, BBB: blood brain barrier, HPA: Hypothalamus –pituitary – adrenal axis.

Declarations of competing interest

The authors declare that there are no conflicts of interest.

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References

- Kessler RC, Bromet EJ. The epidemiology of depression across cultures. *Annu Rev Publ Health*. 2013;34:119–138.
- Leonard BE. The concept of depression as a dysfunction of the immune system. *Depression: From psychopathology to pharmacotherapy*. 2010;27:53–71. Karger Publishers.
- Blair-West GW, Cantor CH, Mellsop GW, Eyeson-Annan ML. Lifetime suicide risk in major depression: sex and age determinants. *J Affect Disord*. 1999;55(2-3):171–178.
- Kessler RC, Gruber M, Hettema JM, Hwang I, Sampson N, Yonkers KA. Comorbid major depression and generalized anxiety disorders in the National Comorbidity Survey follow-up. *Psychol Med*. 2008;38(3):365–374.
- Andrade L, Caraveo-Anduaga JJ, Berglund P, et al. The epidemiology of major depressive episodes: results from the International Consortium of Psychiatric Epidemiology (ICPE) Surveys. *Int J Methods Psychiatr Res*. 2003;12(1):3–21.
- Liu Q, He H, Yang J, Feng X, Zhao F, Lyu J. Changes in the global burden of depression from 1990 to 2017: findings from the global burden of disease study. *J Psychiatr Res*. 2020;126:134–140.
- Fu TS, Lee CS, Gunnell D, Lee WC, Cheng AT. Changing trends in the prevalence of common mental disorders in Taiwan: a 20-year repeated cross-sectional survey. *Lancet*. 2013;381(9862):235–241.
- Olfson M, Marcus SC, Tedeschi M, Wan GJ. Continuity of antidepressant treatment for adults with depression in the United States. *Am J Psychiatr*. 2006;163(1):101–108.
- Gartlehner G, Hansen RA, Morgan LC, et al. Comparative benefits and harms of second-generation antidepressants for treating major depressive disorder: an updated meta-analysis. *Ann Intern Med*. 2011;155(11):772–785.
- Gagnier JJ, Kienle G, Altman DG, et al. *The CARE Guidelines: Consensus-based Clinical Case Reporting Guideline Development*. Wiley Online Library; 2013.
- Zimmerman M, Martinez JH, Young D, Chelminski I, Dalrymple K. Severity classification on the Hamilton depression rating scale. *J Affect Disord*. 2013;150(2):384–388.
- Richter P, Werner J, Heerlein A, Kraus A, Sauer H. On the validity of the Beck depression inventory. *Psychopathology*. 1998;31(3):160–168.
- Buyse DJ, Reynolds 3rd CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatr Res*. 1989;28(2):193–213.
- Burckhardt CS, Anderson KL. The Quality of Life Scale (QOLS): reliability, validity, and utilization. *Health Qual Life Outcome*. 2003;1:60.
- Elliott TE, Renier CM, Palcher JA. Chronic pain, depression, and quality of life: correlations and predictive value of the SF-36. *Pain Med*. 2003;4(4):331–339.
- Wong W, Lam CL, Wong VT, Yang ZM, Ziea ET, Kwan AK. Validation of the constitution in Chinese medicine questionnaire: does the traditional Chinese medicine concept of body constitution exist? *Evid Based Complement Alternat Med*. 2013;2013:481491.
- MacPherson H, Altman DG, Hammerschlag R, et al. Revised Standards for reporting interventions in clinical trials of acupuncture (STRICTA): extending the CONSORT statement. *J Evid Base Med*. 2010;3(3):140–155.
- Chan Y-Y, Lo W-Y, Yang S-N, Chen Y-H, Lin J-G. The benefit of combined acupuncture and antidepressant medication for depression: a systematic review and meta-analysis. *J Affect Disord*. 2015;176:106–117.
- Smith CA, Armour M, Lee MS, Wang LQ, Hay PJ. Acupuncture for depression. *Cochrane Database Syst Rev*. 2018;3(3), Cd004046.
- Dong B, Chen Z, Yin X, et al. The efficacy of acupuncture for treating depression-related insomnia compared with a control group: a systematic review and meta-analysis. *BioMed Res Int*. 2017;2017:9614810.
- Zhang ZJ, Chen HY, Yip KC, Ng R, Wong VT. The effectiveness and safety of acupuncture therapy in depressive disorders: systematic review and meta-analysis. *J Affect Disord*. 2010;124(1-2):9–21.
- Zhichao H, Ching LW, Huijuan L, et al. A network meta-analysis on the effectiveness and safety of acupuncture in treating patients with major depressive disorder. *Sci Rep*. 2021;11(1):1–18.
- Kou RZ, Chen H, Yu ML, Xu TC, Fu SP, Lu SF. Acupuncture for behavioral changes of experimental depressive disorder: a systematic review and meta-analysis. *Sci Rep*. 2017;7(1):9669.
- Di YM, Yang L, Shergis JL, et al. Clinical evidence of Chinese medicine therapies for depression in women during perimenopause and menopause. *Compl Ther Med*. 2019;47:102071.
- Parletta N, Zarnowiecki D, Cho J, et al. A Mediterranean-style dietary intervention supplemented with fish oil improves diet quality and mental health in people with depression: a randomized controlled trial (HELFIEMED). *Nutr Neurosci*. 2019;22(7):474–487.
- Dinan TG, Cryan JF. Melancholic microbes: a link between gut microbiota and depression? *Neuro Gastroenterol Motil*. 2013;25(9):713–719.
- Grosso G, Pajak A, Marventano S, et al. Role of omega-3 fatty acids in the treatment of depressive disorders: a comprehensive meta-analysis of randomized clinical trials. *PLoS One*. 2014;9(5), e96905.
- Kuyken W, Warren FC, Taylor RS, et al. Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: an individual patient data meta-analysis from randomized trials. *JAMA Psychiatr*. 2016;73(6):565–574.
- Paul NA, Stanton SJ, Greeson JM, Smoski MJ, Wang L. Psychological and neural mechanisms of trait mindfulness in reducing depression vulnerability. *Soc Cognit Affect Neurosci*. 2013;8(1):56–64.
- Cabyoglu MT, Ergene N, Tan U. The mechanism of acupuncture and clinical applications. *Int J Neurosci*. 2006;116(2):115–125.
- Le JJ, Yi T, Qi L, Li J, Shao L, Dong JC. Electroacupuncture regulate hypothalamic-pituitary-adrenal axis and enhance hippocampal serotonin system in a rat model of depression. *Neurosci Lett*. 2016;615:66–71.
- Zhao Z-Q. Neural mechanism underlying acupuncture analgesia. *Prog Neurobiol*. 2008;85(4):355–375.
- Li H, Sang L, Xia X, et al. Therapeutic duration and extent affect the effect of moxibustion on depression-like behaviour in rats via regulating the brain tryptophan transport and metabolism. *Evid Based Complement Alternat Med*. 2019;2019:7592124.
- Park HJ, Park HJ, Chae Y, Kim JW, Lee H, Chung JH. Effect of acupuncture on hypothalamic-pituitary-adrenal system in maternal separation rats. *Cell Mol Neurobiol*. 2011;31(8):1123–1127.
- Pirnia B, Mohammadzadeh Bazargan N, Hamdih M, et al. The effectiveness of auricular acupuncture on the levels of cortisol in a depressed patient. *Iran J Public Health*. 2019;48(9):1748–1750.
- Lee MJ, Ryu JS, Won SK, et al. Effects of acupuncture on chronic stress-induced depression-like behavior and its central neural mechanism. *Front Psychol*. 2019;10:1353.
- Napadow V, Makris N, Liu J, Kettner NW, Kwong KK, Hui KK. Effects of electroacupuncture versus manual acupuncture on the human brain as measured by fMRI. *Hum Brain Mapp*. 2005;24(3):193–205.
- Zheng W, Su Z, Liu X, et al. Modulation of functional activity and connectivity by acupuncture in patients with Alzheimer disease as measured by resting-state fMRI. *PLoS One*. 2018;13(5), e0196933.
- Hui KK, Liu J, Makris N, et al. Acupuncture modulates the limbic system and subcortical gray structures of the human brain: evidence from fMRI studies in normal subjects. *Hum Brain Mapp*. 2000;9(1):13–25.
- Sun Y, Zhao Y, Xue SA, Chen J. The theory development of traditional Chinese medicine constitution: a review. *J Traditional Chin Med Sci*. 2018;5(1):16–28.
- Huang C-J, Lin H-J, Liao W-L, Ceurvels W, Su S-Y. Diagnosis of traditional Chinese medicine constitution by integrating indices of tongue, acoustic sound, and pulse. *Eur J Integr Med*. 2019;27:114–120.
- Wong W, Lam CLK, Wong VT, Yang ZM, Ziea ET, Kwan AKL. Validation of the constitution in Chinese medicine questionnaire: does the traditional Chinese medicine concept of body constitution exist? *Evid base Compl Alternative Med*. 2013;2013.
- Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ. Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. *Arch Intern Med*. 2006;166(21):2314–2321.
- Katon WJ, Lin EH, Von Korff M, et al. Collaborative care for patients with depression and chronic illnesses. *N Engl J Med*. 2010;363(27):2611–2620.
- Katon W, Russo J, Lin EH, et al. Cost-effectiveness of a multicondition collaborative care intervention: a randomized controlled trial. *Arch Gen Psychiatr*. 2012;69(5):506–514.