

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

Supplements for the article : *Culturally-adapted and Lay-delivered Cognitive Behavior Therapy for Older Adults with Depressive Symptoms in Rural China: A Pilot Trial*

Contents

1. The Site.....	2
2. Training and Characteristics of Lay Counselors.....	3
2.1 What Are Village Doctors?.....	3
2.2 Training Workshops.....	3
2.3 Demographics of Lay Counselors.....	4
3. Scales	5
3.1 Geriatric Depression Scale (GDS)	5
3.2 Center for Epidemiologic Studies Depression Scale (CES-D)	5
3.3 Mini-Mental State Examination (MMSE)	5
3.4 Self-rating Anxiety Scale (SAS).....	6
3.5 WHO Quality of Life Assessment (WHOQOL-BREF)	6
3.6 Beck Scale for suicide ideation-Chinese Version (BSI-CV)	6
4. Sample Size.....	7
5. Randomization and Masking	8
Table S1	9
Table S2	10
Table S3	11
Figure S1.....	12
References.....	13

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

1. The Site

In 2014, the population was 520,000 in *Mianzhu*, *Sichuan* province, China. The annual per capita household income in the rural areas was 12,501 yuan (approximately 2,035 US dollars). There were 153 village clinics and 626 registered village doctors, averaging four registered village doctors in each village. Approximately, 98% of the rural population had medical insurance under the National New Rural Co-operative Medical System. China's public health system provides chronic management for all older adults, which are delivered by village doctors or other health workers and are free of charge.

2. Training and Characteristics of Lay Counselors

2.1 What Are Village Doctors?

The lay counselors were recruited from village doctors (“村医 *Cunyi*”), one kind of primary health workers. China’s village doctors, also named ‘barefoot doctors’ many years ago, were a major inspiration to the global primary health care movement in the 1970s. Now, they practice with a Village Doctor License, which is designated by the Ministry of Health. They deliver basic public health services in rural communities, which are paid by governments. Their services include health records establishment for every resident, health education, immunization, chronic disease (hypertension and diabetes) management, severe mental disorder management, maternal and child health care, elderly health care. At the same time, village doctors own private clinics and provide diagnosis, prescription, chemical treatment drugs, or traditional Chinese medicine. However, they lack high-level medical training. Our previous survey has reported that four in five lay health workers or rural primary care doctors in China were without a college degree or higher education in medical schools (Xu et al., 2014). More information on village doctors can be found in T. Li, Lei, Xie, and Zhang (2016).

2.2 Training Workshops

The six-day training workshops for the village doctors were arranged on three weekends in the county town. The advertisements for the first two-day training were posted by e-mail and instant messaging to inform all village doctors there. These advertisements highlighted that the training was free of charge and voluntary. Sixty

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

village doctors participated in the Day 1 and Day 2 training. Description of training manuals and textbooks can be found in (Tang et al., 2015). At the end of the second day, we introduced our program and invited the village doctors to participate in. Then, the doctors with the willingness took a written quiz to assess mastery of knowledge and attitude. Only those who passed the tests could attend advanced training. Then, 33 were qualified and invited to attend the advanced training from Day 3 to Day 6. A psychiatrist, a licensed psychologist, and a certified cognitive therapist taught CBT skills and the structure of each session in an interactive way. The final role-playing evaluations on counseling competence were assessed using the Cognitive Therapy Rating Scale (Young & Beck, 1980) by two trainers. Because our project was targeted at reducing older adults' subsyndromal depressive symptoms and preventing major depressive disorder, and the training was limited, twenty or more score on Cognitive Therapy Rating Scale was regarded as an adequate level for conducting in this trial after we consulting the CBT experts. Twelve doctors finished the entire workshop and took the final evaluation. Finally, ten doctors passed the evaluation.

2.3 Demographics of Lay Counselors

All counselors were of Han Chinese ethnicity. The ages ranged from 36 to 44 years old (mean, 40.8). Eight were females. Eight graduated from technical secondary schools, one had a college degree, and one had a senior high school education. Among them, two were licensed assistant physicians and one was a licensed physician. The average medical practice experience was 16.7 years.

3. Scales

3.1 Geriatric Depression Scale (GDS)

The GDS was developed by (Yesavage et al., 1982). It measures whether depressive symptoms present in the past week. We used the full scale, which consists of 30 items. Total score ranges from 0 “*least depressed*” to 30 “*most depressed*”. The scale is convenient to answer and has good reliability and validity in rural China (He, Xiao, & Zhang, 2008). Other trials in rural China also used the GDS scale to measure changes before and after therapies or interventions for older adults with depressive symptoms (Xie et al., 2017; Zhou et al., 2012).

The strengths of GDS were that older adults could easily answer with “*yes*” or “*no*” and that the change in the GDS score could subsequently measure the treatment effect.

3.2 Center for Epidemiologic Studies Depression Scale (CES-D)

The CES-D, developed by Radloff (1977), measures how often they experienced symptoms associated with depression over the past week. The CES-D includes 20 items. Each item score ranges from 0 “*rarely or none of the time*” to 3 “*most or almost*”. In China, the Chinese version of CES-D also shows good reliability and validity across all ages and the cut-point (>15) is also recommended (Zhang et al., 2010).

3.3 Mini-Mental State Examination (MMSE)

The MMSE scale was developed by Folstein, Folstein, and McHugh (1975). The MMSE scale was validated in China (Wu, Zhou, Como, Fan, & Qiao, 2002). We

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

chose the same cut-point for participants with different education levels. As shown in Supplement Table 1, the majority of their education levels were low.

3.4 Self-rating Anxiety Scale (SAS)

Frequency of anxiety symptoms over the past two weeks was assessed using the 20-item SAS (Zung, 1971). Items were rated by interviewers on a 4-point scale, ranging from 1 “none” to 4 “severe” based on symptom intensity, duration, and frequency. The transformed (standardized) score is the production of the raw total score and 1.25. Thus, the score ranges from 25[no anxiety] to 100[severe anxiety]. The scale shows good reliability and validity in the Chinese population (Tao & Gao, 1994).

3.5 WHO Quality of Life Assessment (WHOQOL-BREF)

The WHOQOL-BREF was developed by Skevington, Lotfy, and O'Connell (2004). In our study, social relationships over the last two weeks were measured by domain 3 of WHOQOL-BREF. It consisted of three items, rating from 1 “very dissatisfied” to 5 “very satisfied”. The transformed total score ranges from 4 “worst social relationships” to 20 “best social relationships” (World Health Organization, 1996). It has been validated in China (Xia, Li, Hau, Liu, & Lu, 2012).

3.6 Beck Scale for suicide ideation-Chinese Version (BSI-CV)

Item 4 and item 5 in the BSI-CV was used to assess passive and active suicidal ideation within a week (Beck, Kovacs, & Weissman, 1979). The items are rated from 0 “none” to 2 “severe” by participants. Its Chinese version has good reliability and validity (X. Li et al., 2010).

4. Sample Size

The sample size was to be 50. Except research budget and limited research sites, there were other two reasons for statistical power.

First, Sim & Lewis (2012) noted at least 50 participants are needed in a pilot study to obtain high precision and efficiency.

Second, we calculated that 114 were needed for the future definitive trial (another large-scale, adequately-powered randomized control trial) using Stata. The sample size was based on a two-sided significance level at .05, power (1- β) of .90, an estimate of a remission rate in the control group of .15, an estimate of a remission rate in the intervention group of .35. Remission rates were estimated based on a geriatric depression intervention study in China using GDS in their outcome assessments (Feng, Jia, Hu, & Wang, 2005). Thus, we estimated that the sample of the pilot study will be nearly 50, which was about more than 40% of the size for the future large-scale trial ($50/114 = 44\%$).

5. Randomization and Masking

Each participant had a unique id number, but if a couple was enrolled, they shared the same id number during the randomization to avoid interfering with each other. The participants were stratified by the treatment site in a 1:1 allocation using random block sizes of 2, 4, and 6 using a web-based program (Sealed Envelope Ltd.) by an independent researcher. Only the assessors and data analysts were masked to the group assignments.

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

Table S1

Demographics of Participants in the Cognitive Behavior Therapy (CBT) Arm and Care as Usual (CAU) Arm (N = 50).

Variables		CBT (n = 24)	CAU (n = 26)		p
		n (%)	n (%)	χ^2	
Sex				2.40	.121
	Female	9(37.5)	15(57.7)		
	Male	15(62.5)	11(42.3)		
Age (years)	<i>Mean = 70.5, SD = 5.6</i>				.351 ^a
	64–69	11(45.8)	16(61.5)		
	70–79	10(41.7)	9(34.6)		
	80–90	3(12.5)	1(3.9)		
Education					.700 ^a
	Unschooling	8(33.3)	7(26.9)		
	Primary school	13(54.2)	17(65.4)		
	Middle school or above	3(12.5)	2(7.7)		
Marital status				0.14	.712
	Married	18(75.0)	19(73.1)		
	Divorce or widowed	6(25.0)	7(26.9)		
Number of chronic diseases		<i>Mean</i> (<i>SD</i>)	<i>Mean</i> (<i>SD</i>)	<i>t</i> ^{'b}	
		2.25(1.73)	2(1.33)	0.57 ^b	.570

Note. ^aFisher's exact test. ^bThe *t*' in t-test for unpaired data have unequal variances.

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

Table S2

Depressive Symptoms, Anxiety Symptoms, and Social Relationship at the Baseline, Week 4, and Week 8 in the Cognitive Behavior Therapy (CBT) Arm and Care as Usual (CAU) Arm (N = 50).

Outcome	CBT <i>n</i> = 24		CAU <i>n</i> = 26	
	<i>Mean (SD)</i>	Score ≥ 10 (<i>n</i>)	<i>Mean (SD)</i>	Score ≥ 10 (<i>n</i>)
GDS ^a	<i>Mean (SD)</i>	Score ≥ 10 (<i>n</i>)	<i>Mean (SD)</i>	Score ≥ 10 (<i>n</i>)
Baseline	13.79(3.46)	24	14.65(3.42)	26
Week 4	14.75(4.60)	22	15.69(5.78)	21
Week 8	11.75(4.46)	15	14.69(4.53) ^d	23
SAS ^b	<i>Mean (SD)</i>		<i>Mean (SD)</i>	
Baseline	54.46(5.69)		51.15(5.82)	
Week 4	48.71(9.31)		50.46(9.32)	
Week 8	47.21(8.34)		47.69(6.69) ^d	
Social relationship	<i>Mean (SD)</i>		<i>Mean (SD)</i>	
Baseline	12.75(3.39)		14.62(2.50)	
Week 4	13.92(1.93)		13.85(2.03)	
Week 8	14.08(2.72)		14.23(3.51) ^d	

Note. a. Scores on the Geriatric Depression Scale (Yesavage et al., 1982) range from 0 “least depressed” to 30 “most depressed”. b. Scores on the Self-Rating Anxiety Scale (Zung, 1971) range from 0 “no anxiety” to 100 “severe anxiety”. c. Scores on domain 3 of World Health Organization’s WHOQOL-BREF quality of life assessment (Skevington, Lotfy, & O’Connell, 2004) range from 4 to 20, and a higher score indicates greater social relation. d. The missing (*n* = 1) was imputed using the score at week 4.

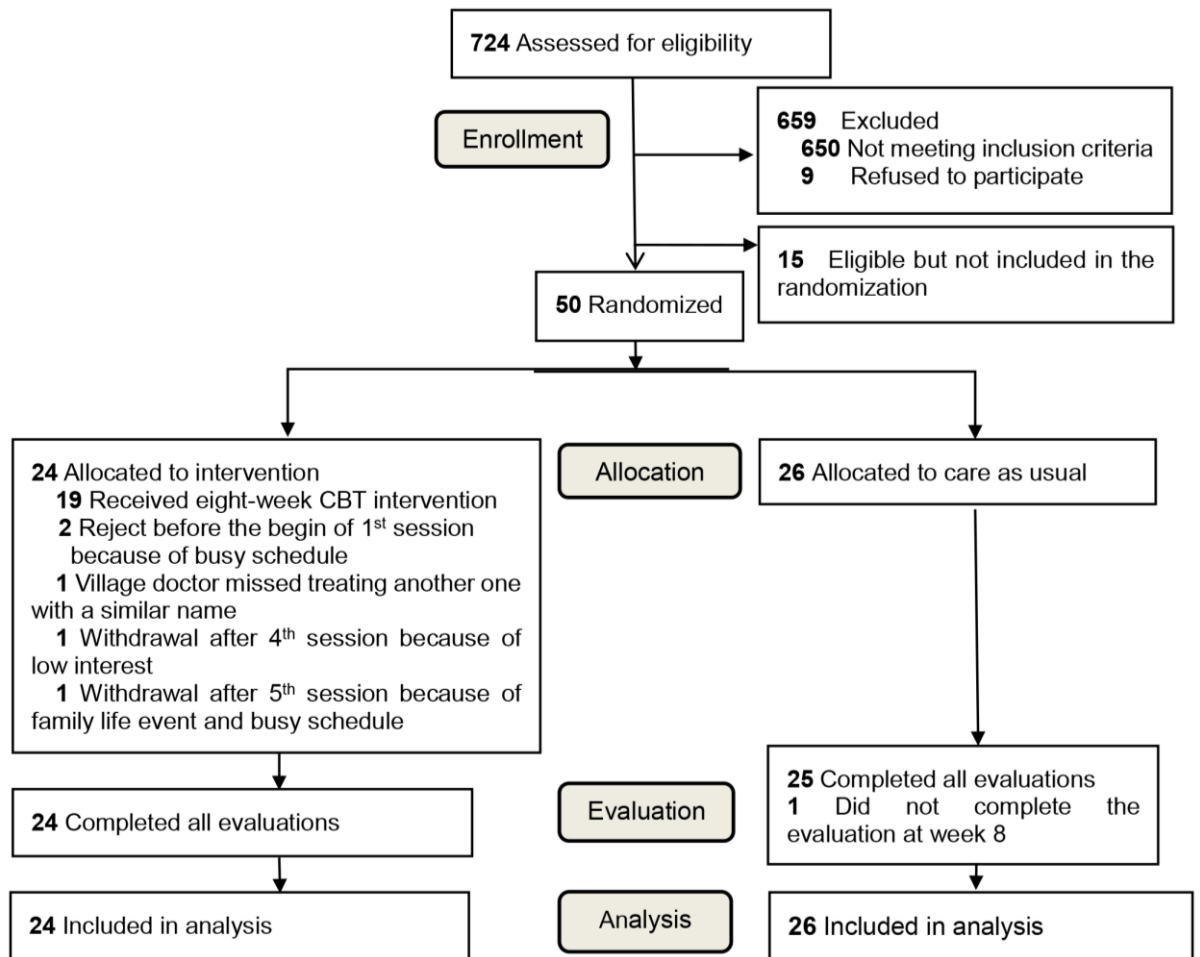
LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

Table S3

Recent Suicidal ideation at the Baseline, Week 4, and Week 8 in the Cognitive Behavior Therapy (CBT) Arm and Care as Usual (CAU) Arm (N = 50).

Suicidal ideation within one week		CBT <i>n</i> = 24			CAU <i>n</i> = 26		
		None	Mild	Severe	None	Mild	Severe
Passive suicidal ideation							
Baseline	24	0	0	26	0	0	
Week 4	22	2	0	26	0	0	
Week 8	24	0	0	23	1	1	
Active suicidal thought							
Baseline	24	0	0	26	0	0	
Week 4	24	0	0	26	0	0	
Week 8	24	0	0	24	0	1	

Note: Scores for Item 4 and Item 5 of the Beck Scale for suicide ideation-Chinese Version (BSI-CV).

Figure S1*CONSORT Diagram Detailing Study Flow of Participants from the Screening to Analysis*

References

- Beck, A. T., Kovacs, M., & Weissman, A.** (1979). Assessment of suicidal intention: The scale for suicide ideation. *Journal of Consulting and Clinical Psychology*, 47(2), 343-352. doi:10.1037//0022-006x.47.2.343
- Feng, Z., Jia, S., Hu, Y., & Wang, J.** (2005). The need of community intervention to elders in depression. *Chinese General Practice*(1), 30-31.
- Folstein, M. F., Folstein, S. E., & McHugh, P. R.** (1975). "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, 12(3), 189-198.
doi:10.1016/0022-3956(75)90026-6
- He, X., Xiao, S., & Zhang, D.** (2008). Reliability and validity of geriatric depression scale in elders in China rural area [Chinese]. *Chinese Journal of Clinical Psychology*(05), 473-475+543.
- Li, T., Lei, T., Xie, Z., & Zhang, T.** (2016). Determinants of basic public health services provision by village doctors in China: Using non-communicable diseases management as an example. *BMC Health Service Research*, 16, 42.
doi:10.1186/s12913-016-1276-y
- Li, X., Phillips, M., Tong, Y., Li, K., Zhang, Y., Zhang, y., . . . Niu, Y.** (2010). Reliability and validity of the Chinese version of Beck Suicide Ideation Scale (BSI-CV) in adult community residents. *Journal of Chinese Mental Health*, 24(4), 250-255.
- Radloff, L. S.** (1977). The CES-D scale:A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1(3), 385-401.
doi:10.1177/014662167700100306
- Sealed Envelope Ltd.** (2019 April 19). Create a blocked randomisation list. Retrieved from www.sealedenvelope.com/simple-randomiser/v1/lists
- Skevington, S. M., Lotfy, M., & O'Connell, K. A.** (2004). The world health organization's WHOQOL-BREF quality of life assessment: Psychometric

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

properties and results of the international field trial. A report from the WHOQOL group. *Quality of Life Research*, 13(2), 299-310.

doi:10.1023/b:Qure.0000018486.91360.00

Tang, X., Yang, F., Tang, T., Yang, X., Zhang, W., Wang, X., . . . Qu, Z. (2015).

Advantages and challenges of a village doctor-based cognitive behavioral therapy for late-life depression in rural China: A qualitative study. *PLoS One*, 10(9), e0137555. doi:10.1371/journal.pone.0137555

Tao, M., & Gao, J. (1994). The reliability and validity of the self-report anxiety scale

(sas-cr). *Chinese Journal of Nervous and Mental Diseases*, 20(5), 301-303.

World Health Organization. (1996). WHOQOL-BREF: introduction,

administration, scoring and generic version of the assessment. Retrieved from https://www.who.int/mental_health/media/en/76.pdf

Wu, C., Zhou, D., Como, P., Fan, J., & Qiao, Y. (2002). Applicability of a screening

scale of alzheimer disease in rural area of China [Chinese] *Journal of Chinese Mental Health*, 4, 242-245.

Xia, P., Li, N., Hau, K. T., Liu, C., & Lu, Y. (2012). Quality of life of Chinese urban

community residents: A psychometric study of the mainland Chinese version of the WHOQOL-bref. *BMC Medical Research Methodology*, 12, 37.

doi:10.1186/1471-2288-12-37

Xie, J., He, G., Ding, S., Pan, C., Zhang, X., Zhou, J., & Iennaco, J. D. (2017). A

randomized study on the effect of modified behavioral activation treatment for depressive symptoms in rural left-behind elderly. *Psychotherapy Research*, 29(3), 372-382. doi:10.1080/10503307.2017.1364444

Xu, H., Zhang, W., Gu, L., Qu, Z., Sa, Z., Zhang, X., & Tian, D. (2014). Aging

village doctors in five counties in rural China: Situation and implications. *Human Resources for Health*, 12, 36. doi:10.1186/1478-4491-12-36

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer,

V. O. (1982). Development and validation of a geriatric depression screening

LAY-DELIVERED CBT FOR LATE-LIFE DEPRESSION IN CHINA

scale: A preliminary report. *Journal of Psychiatry Research*, 17(1), 37-49.

doi:10.1016/0022-3956(82)90033-4

Young, J. E., & Beck, A. T. (1980, August 23, 2020). Cognitive therapy rating scale.

Retrieved from

<https://beckinstitute.org/get-informed/tools-and-resources/professionals/cbt-basics-and-beyond-patient-worksheets/>

Zhang, J., Wu, Z., Fang, G., Li, J., Han, B., & Chen, Z. (2010). Development of the Chinese age norms of CES-D in urban China [Chinese]. *Journal of Chinese Mental Health*, 24(2), 139-143.

Zhou, W., He, G., Gao, J., Yuan, Q., Feng, H., & Zhang, C. K. (2012). The effects of group reminiscence therapy on depression, self-esteem, and affect balance of Chinese community-dwelling elderly. *Archives of Gerontology and Geriatrics*, 54(3), e440-447. doi:10.1016/j.archger.2011.12.003

Zung, W. W. (1971). A rating instrument for anxiety disorders. *Psychosomatics*, 12(6), 371-379. doi:10.1016/s0033-3182(71)71479-0