Non-pharmacological interventions for neurocognitive disorders: Highlighting local experience

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Contents

- Non-pharmacological intervention for cognitive symptoms
- Non-pharmacological interventions for behavioural & psychological symptoms

Non-pharmacological Interventions for cognitive symptoms

Non-pharmacological intervention for cognitive

symptoms

- Cognitive stimulation
 - Activities involve some degree of cognitive processing
 - Often within a social context
 - Emphasis on enjoyment of activities
- Cognitive training
 - Training exercise geared to specific cognitive function
 - Individual or group based
 - Practice and repetition
- Cognitive rehabilitation
 - Individually tailored & work on personal goals
 - Often use external cognitive aid & learning strategies Clare & Woods, Neuropsychol Rehabil 2004;14:385-401

Cognitive Stimulation as a Therapeutic Modelity East Asian Arch Psychiatry 2021;31:55-66 **Cognitive Stimulation for Persons with** Dementia: a Systematic Review and Meta-Analysis YL Wong, CPW Cheng, CSM Wong, SN Wong, HL Wong, S Tse, GHY Wong, WC Chan 20 RCTs (1251 participants with dementia; 674 received CS and 577 received usual care) CS improved cognitive function among people with dementia es's g and 95% CI Hedges's g = 0.313 Autract Devert <thDevert</th> <thDevert</th> <thDevert</t 0.515 2.953 2.511 0.606 0.003 0.012 0.450 0.279 0.523 0.272 0.520 0.390 0.288 0.210 0.478 0.255 0.241 0.172 0.121 0.301 0.390 0.157 0.440 0.271 0.940 0.702 0.371 0.714 0.741 -0.343 0.195 0.248 0.471 0.174 0.350 -0.246 0.436 0.436 0.156 0.981 -0.392 0.370 0.178 (95% CI: 0.154-0.472) 0.709 2.624 1.427 -0.879 0.677 1.182 0.987 0.326 1.375 0.478 0.009 0.154 0.380 0.498 0.237 0.324 0.744 -1.022 2.532 1.294 3.264 -1.005 2.351 0.404 0.315 -0.069 3.859 eity: Tau² = 0.043; Q = 30.584, df = 19 (p = 0.045); $\Gamma^2 = 37.877\%$ Wong, et al. East Asian Arch Psychiatry 2021:31:55-66 est for overall effect: Z = 3.859 (p = 0.0001)

Combined pharmacological & non-pharmacological interventions

54 persons with mild to mod AD Intervention (cog stimulation + donepezil) vs. Control (donepezil only) CS = 8 weekly group sessions + monthly contacts on individual basis Mean change in MMSE over 1 year: Intervention : -1.25 Control: -2.14
49 persons with AD Intervention (cog stimulation + donepezil) vs. Control (donepezil only) CS = 7 weekly group sessions Proportion of participants whose Hasegawa's Dementia Scale-Revised score increase by 4 points: Intervention : 25.8% Control: 0%

Non pharmacological intervention for cognitive symptoms

Cognitive stimulation incorporated into NICE Guidelines (2018)

- 1.4 Interventions to promote cognition, independence and wellbeing
- 1.4.1 Offer a range of activities to promote wellbeing that are tailored to the person's preferences.
- 1.4.2 Offer group <u>cognitive stimulation</u> therapy to people living with mild to moderate dementia.

Examples of local studies (1)

SPECIAL ISSUE PAPER

Geriatric Psychiatry

Cultural adaptation of cognitive stimulation therapy (CST) for Chinese people with dementia: multicentre pilot study

Gloria H. Y. Wong^{1,2,3}, Olive P. L. Yek^{1,2}, Anna Y. Zhang¹, Terry Y. S. Lum^{1,2} and Aimee Spector⁴

- Pilot multicentre study of culturally adapted CST-HK
- Cultural adaptation
- People with mild dementia (n=30)
 - 54% no cognitive deterioration
 - 23% showed clinically meaningful improvement

Wong, et al. Int J Geriatr Psychiatry 2018; 33: 841-848

Examples of local studies (1)

- Family caregivers and group facilitators (n=25)
- Focus group or in-depth interviews
 - Good acceptance of CST, with a low attrition (13%) and high attendance rate of CST-HK sessions (92%)
 - Key cultural issues identified
 - Less active opinion sharing in group discussions due to conservatism/cautiousness
 - Preference of practical activities with reward/recognition over pure discussion due to pragmatism
- Ongoing larger-scale implementation and research in Chinese populations

Examples of local studies (2)

Clinical Interventions in Aging

open Access Full Text Article

open access to scientific and medical research

Wong, et al. Int J Geriatr Psychiatry 2018; 33: 841-848

Dovepress

Effectiveness of cognitive training for Chinese elderly in Hong Kong

Timothy Kwok^{1,2} Anita Wong³ Grace Chan⁴ YY Shiu³ Ko-Chuen Lam² Daniel Young² Daniel WH Ho² Florence Ho²

- 200 participants from 20 district elderly community centers
 - Intervention: eight 1-hour sessions of Active Mind cognitive-training programme
 - Control: Usual group activities
- 176 participants completed the study
 - Intervention group showed greater improvement in the cognitive function & QoL
 - Total CDRS score (treatment: 12.24 ± 11.57 vs control: 4.37 ± 7.99; P, 0.001)
 - Total SF12 score (treatment: 7.82 ± 13.19 vs control: 3.18 ± 11.61; P = 0.014)

Kwok et al, Clinical Interventions in Aging 2013:8 213-219

Examples of local studies (3)



Lee et al, Clinical Interventions in Aging 2013:8 623–633

Physical exercise as a therapeutic modality

GURRENT

Exercise for the prevention and treatment of neurocognitive disorders: new evidence and clinical recommendations

Wai Chi Chan^a, Allen T.C. Lee^b, and Linda C.W. Lam^b

- Physical exercise is probably efficacious in preventing cognitive decline among cognitively normal older adults
- Possible beneficial efficacy of exercise in MCI and dementia on global cognition
- Evidence suggests that aerobic exercise is efficacious in improving cognition in older adults but other modalities like resistance training and mind-body exercise may also be beneficial
- Intensity of exercise should be adjusted for older adults with different cognitive function

Chan, et al. Curr Opin Psychiatry 2021, 34:136-141

Example of local studies



JAMDA

Original Study

A 1-Year Randomized Controlled Trial Comparing Mind Body Exercise (Tai Chi) With Stretching and Toning Exercise on Cognitive Function in Older Chinese Adults at Risk of Cognitive Decline

Linda C.W. Lam MD^{a,*}, Rachel C.M. Chau MSc^a, Billy M.L. Wong MSc^a, Ada W.T. Fung MSc^a, Cindy W.C. Tam MRCPsych^a, Grace T.Y. Leung MRCPsych^a, Timothy C.Y. Kwok FRCP^b, Tony Y.S. Leung MSc^a, Sammy P. Ng MPH^c, Wai M. Chan MPH^c

- 389 participants at risk of cognitive decline (CDR 0.5 or amnestic-MCI)
 - Intervention: 171 participated in Tai Chi sessions by instructors then VCD
 - Control: 218 trained with stretching and toning exercise

Lam, et al. JAMDA 13 (2012) 568.e15e568.e2

JAMDA

Example of local studies

- At 1 year, 54% of participants of the Intervention Group and 78% of Control Group completed the programme
- Intervention Group, c.f. Control Group
 - A trend for lower risk of developing dementia at 1 year (odds ratio 0.21)
 - Better preservation of CDR sum of boxes scores
 - Greater improvement in delayed recall and Cornell Scale for Depression in Dementia scores
- Regular exercise, especially mind-body exercise with integrated cognitive and motor coordination, may help to preserve global cognitive function in older adults at risk of decline
- Needs to look into logistics to promote long-term practice and optimise adherence

Lam, et al. JAMDA 13 (2012) 568.e15e568.e20

Nutritional intervention as a therapeutic modality

- Cochrane Review
 - 5 trials on B vitamin supplements showed no overall beneficial effects on cognition
 - Positive results in 1 trial of MCI patients with high homocysteine
 - 2 trials of vitamin E supplementation (2000 IU/d) delayed progression in functional decline (n=613), and delayed progression of AD as exemplified by the time to death, institutionalisation, inability to perform BADL, or severe dementia (n=341)
 - May be associated with significant adverse events, eg dental events, falls, and syncopal episodes
- Systematic review
 - Improvement in cognitive performance by supplementation of DHA and EPA (2 studies, n=36 and n=86), DHA (1 study, n=240), and flavonols (1 study, n=90)
- Single trials
 - Low-saturated fat/low-glycemic index diet, low carbohydrate diet, calorie restriction-induced weight loss diet, blueberry drink

Sikkes et al, Alzheimer's Dement, 2021;17:255–270

Example of local studies

Age and Ageing 2017; 0: 1–6 doi: 10.1093/ageing/afx018 © The Author 2017. Published by Oxford University Press on behalf of the British Geriatrics Society. All rights reserved. For permissions, please email: journalspermissions@oup.com

Lower risk of incident dementia among Chinese older adults having three servings of vegetables and two servings of fruits a day

Allen T. C. Lee¹, Marcus Richards², Wai C. Chan³, Helen F. K. Chiu¹, Ruby S. Y. Lee⁴, Linda C. W. Lam¹

Observational studies: dietary patterns

Follow up 17,700 community-living dementia-free Chinese older adults for 6 years

Daily consumption at baseline	Estimated ORs	
At least 3 servings of vegetables	0.88	
At least 2 servings of fruits	0.86	
At least 3 servings of vegetables and 2	0.75	
servings of fruits		Lee, e

Multimodal intervention for cognitive symptoms

PLOS ONE

RESEARCH ARTICLE

Would Older Adults with Mild Cognitive Impairment Adhere to and Benefit from a Structured Lifestyle Activity Intervention to Enhance Cognition?: A Cluster Randomized Controlled Trial

Linda Chiu-wa Lam¹*, Wai Chi Chan², Tony Leung¹, Ada Wai-tung Fung¹, Edward Man-fuk Leung³ CP group, compared with other intervention groups, had more significant improvements of ADAS-Cog, delayed recall and CVFT performance with sdMCI participants

Lam LC, et al. PLoS ONE 2015; 10(3): e0118173

555 participants aged 60 years or over with MCI

Intervention

• Physical group, e.g. stretching & toning exercise, mind body exercise (e.g. Tai Chi) and aerobic exercise (n = 147)

- Cognitive group, e.g. reading and discussing newspapers, playing board games (n = 145)
 Integrated cognitive-physical group (n = 132)
- Integrated Cognitive-physical group

Control

• Social group, e.g. tea gathering, film watching (n = 131)

Multimodal intervention for cognitive symptoms

A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial

Tiia Ngandu, Jenni Lehtisalo, Alina Solomon, Esko Levälahti, Satu Ahtiluoto, Riitta Antikainen, Lars Bäckman, Tuomo Hänninen, Antti Jula, TiinaLaatikainen, Jaana Lindström, Francesca Mangialasche, Teemu Paajanen, Satu Pajala, Markku Peltonen, Rainer Rauramaa, Anna Stigsdotter-Neely, Timo Strandberg, Jaakko Tuomilehto, Hilkka Soininen, Miia Kivipelto

- 1260 at-risk older adults aged 60-77 yo
- Intervention (n = 631): nutritional guidance, exercise training, cognitive training, social activity, vascular risk monitoring
- Control (n = 629): regular health advice
- At 2 years, mean change in neuropsychological test battery (14 tests) Z score was 0.20 (intervention) and 0.16 (control), i.e. 25% improvement in NTB scores

Ngandug, et al. Lancet 2015; 385: 2255-63







Behavioural & Psychological Symptoms of Dementia (BPSD)

- "Symptoms of disturbed perception, thought content, mood, or behaviour frequently occurring in patients with dementia" (IPA Consensus Conference, 1996)
- Occur in up to 90% of dementia patients

Population-based prevalence of behavioural & psychological symptoms



Simplified etiopathogenetic model of BPSD Patient factors Environmental factors Unmet needs (m) Knowledge about condition (m) Often complex and Pain (m) Caregiver distress (m) multifactorial Acute medical problems (m) Over-/understimulation (m) Comorbidities (pm) Lack of routines (m) Type of dementia (u) Caregiving quantity (pm) m: modifiable Dementia stage (u) Caregiving quality (pm) pm: potentially modifiable Brain changes (u) Caregiver's knowledge (m) u: unmodifiable Neurotransmitter changes (pm) Infrastructure of care facility (u) Genetic makeup (u) Life event / separation (u) Personality (u) Family dynamics (pm) Life history (u) Behavioural and psychological symptoms of dementia Tible OP, etc. Ther Adv Neurol Disord 2017:10(8):297-309

Management of BPSD

- Define target symptoms
- Establish or reconsider medical diagnosis
- Establish or reconsider psychiatric diagnosis
- Assess or reverse aggravating factors
- Environment
- Non-pharmacological / pharmacological management

Caregiver Interventions

- Meta-analysis of 30 caregiver studies
 - Reduce carer psychological distress
 - Improve carer knowledge
 - Improve patient mood

		Standardized Mear Difference* (95%
Study		Confidence Interval
Moniz-Cook et al. 1998 (GHQ)		1.81 (0.94-2.67)
Marriot et al. 2000 (GHQ)	_	1.57 (0.69-2.45)
Hinchliffe et al. 1995 (GHQ)	· · · · · · · · · · · · · · · · · · ·	1.42 (0.64-2.21)
Teri et al. 1997; problem solving (HDRS)	· · · · · · · · · · · · · · · · · · ·	1.10 (0.27-1.92)
Quayhagen et al. 1989 (HSC)	+	0.92 (-0.16-2.00
Brodaty and Gresham 1989 (GHQ)		0.77 (0.27-1.28)
Quayhagen et al. 2000; cog. stimulation (BSI)		0.59 (-0.09-1.27
Feri et al. 1997; pleasant events (HDRS)	—	0.53 (-0.23-1.29
Zanetti et al. 1998 (BSI)	•	0.46 (-0.42-1.34
Chang et al. 1999 (BSI)	·+•	0.45 (-0.04-0.95
/littelman et al. 1995 (GDS)	⊢ ●−	0.29 (0.02-0.60)
Nohide et al. 1990 (CES-D)	→	0.26 (-0.35-0.87
Dstwald et al. 1999 (CES-D)	· -+	0.25 (-0.20-0.70
AcCurry et al. 1998 (CES-D)		0.21 (-0.58-1.00
lebert et al. 1994 (BSI)	- •	0.20 (-0.47-0.86
Ripich et al. 1998 (PANAS)	_ - •-	0.15 (-0.50-0.81
Quayhagen et al. 2000; day care (BSI)		0.12 (-0.58-0.83
(ahan et al. 1985 (SDS)	_ - •-	0.09 (-0.53-0.72
Gendron et al. 1996 (HSC)	e •	0.07 (-0.60-0.73
arit et al. 1987; counseling (BSI)		0.02 (-0.43-0.48
Norris et al. 1992 (BDI)	-+	-0.09 (-0.80-0.63
Brodaty et al. 1994 (GHQ)		-0.16 (-0.71-0.38
cant et al. 1987; support group (BSI)		-0.17 (-0.60-0.27
ogiudice et al. 1999 (GHQ)	· -•	-0.18 (-0.87-0.52
Hoberts et al. 1999 (PAIS)	-	-0.24 (-0.75-0.28

Brodaty, et al. JAGS 2003;51:657-664

Examples of local studies (1)

- Home-based Exercise Intervention
- 24-week RCT involving 137 caregivers (8 home-based sessions)
 - Intervention group: 12-step sitting Tai Chi (Taiji)
 - Control groups: social contact only
- Compared to control groups, home-based Tai Chi achieved:



 Significant drop of HAM-D-17 from baseline to Week 6 then Week 12 among caregivers in Tai Chi group

> Chan, et al. Trials. 2016,17:460 Chan, et al. Hong Kong Med J. 2020, 26(Suppl 7)

Examples of local studies (2)

A Disease Management Program for Families of Persons in Hong Kong With Dementia

Wai Tong Chien, Ph.D., R.M.N. Yuet Ming Lee, M.Phil., R.G.N.

PSYCHIATRIC SERVICES ' ps.psychiatryonline.org ' April 2008 Vol. 59 No. 4

- Disease management programme
 - 12-month RCT involving 88 dementia patient-carer dyads, based on REACH & authors' work
 - Intervention group: psycho-education + support group
 - Control group: standard care

Chien WT, et al. Psychiatr Serv 2008;59:433-436

Examples of local studies (2)

- Disease management programme
 - Features of disease management programme
 - Case manager: structured needs assessment -> coordinate dementia care
 - 12 psychoeducational sessions (e.g. dementia care, family role & strength rebuilding, community resources)
 - Culturally sensitive (valuing collectivism over individualism, emphasising filial obligation and family and kinship ties)
 - Support group
 - Compared to control group, disease management programme achieved:
 - Caregivers: greater improvement in QoL and burden
 - · Care recipients: greater improvement in symptoms, lower institutionalisation rate

Chien WT, et al. Psychiatr Serv 2008;59:433-436

Examples of local studies (3)

Clinical Interventions in Aging

Dovepress

Alma Au^{1,2}

Jess Leung⁴ Wai-Chi Chan⁵

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Dolores Gallagher-Thompson³

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open Access Full Text Article

ORIGINAL RESEARCH

Behavioral activation for dementia caregivers: scheduling pleasant events and enhancing communications

- Phone administered behavioural activation
 - 4-month RCT involving 62 participants
 - Intervention group: psycho-education + behavioral activation (BA) module
 - Control group: psycho-education only

Au A, et al. Clinical Interventions in Aging. 2015.10:611-619

Examples of local studies (3)

- Phone administered behavioural activation
 - Features of BA
 - Enhance coping skills (pleasant event scheduling, improving communications)
 - Delivered by telephone to increase accessibility
 - Older adults trained as paraprofessionals to deliver BA module increases the sustainability
 - Compared to control group, BA achieved:
 - Fewer depressive symptoms
 - Lower attrition rate
 - BA could be effectively administered through the telephone with the help of older adults trained and engaged as paraprofessionals



Cheng, et al. Am J Geriatr Psychiatry. 2019,27(9):984-994 Cheng, et al. Am J Geriatr Psychiatry (in press)

Examples of local studies (4)

- Benefit-finding Intervention
 - Features of BFI
 - Psychoeducation (information and problem solving)
 - Positive reappraisal coping & finding benefits (cognitive restructuring techniques to help caregivers construe the demands of caregiving in more positive ways)
 - Mutual sharing in groups
 - Voice-recorded diaries to reflect on positive experiences
 - Compared to control groups, BFI achieved:
 - Improvement in depressive symptoms & carer burden (c.f. standard psychoeducation), improvement in all outcomes (c.f. simplified psychoeducation)
 - BFI participants reported fewer neuropsychiatric symptoms in their care-recipients at 4month follow-up
 - Mediated by improved caregiver depression at postintervention

Environmental Interventions

- Physical environment
 - Non-stressful, constant, familiar
 - Comfortable & encourage social gatherings
 - Safe for wandering: places for ambulation, digital locks, artificial partition, electronic bracelet, alarm system, devices with global positioning technology



Environmental Interventions

- Temporal environment (stable daily schedule)
- Environmental interventions, e.g. bright-light therapy, daytime activities, passive heating

http://bestpractice.bmj.com/topics/en-us/317 (Last updated: November 2017)

Behavioural Interventions

- Identify target BPSD
- Gather information about the BPSD
- Identify what happens before & after
- Set realistic goals and make plans
- Encourage carers to reward themselves & others for achieving goals
- Continually evaluate & modify

Adjunctive Therapies

- Sensory practices
 - Aromatherapy, massage, multisensory stimulation, bright light therapy
- Psychosocial practices
 - Validation therapy, reminiscence therapy, music therapy, pet therapy, meaningful activities
- Structured care protocols
 - Mouth care, bathing

Scales, et al. Gerontologist 2018,58(S1):S88-S

Examples of local studies (1)

- Reminiscence therapy
 - Randomly assigned 101 dementia persons (control = 30, comparison = 35, intervention = 36)
 - Intervention: weekly 30-min session x 6/52, life story approach
 - Intervention group: improved psychosocial well-being (e.g. being able to express wishes in an acceptable way, bodily relaxation, creative self-expression such as singing/dancing/painting)



Lai, et al. Int Psychogeriatr 2004;16:33-49

Examples of local studies (2)

- Music therapy
 - Crossover design: 14 persons with moderate to severe dementia
 - Intervention: 45-min session 3 times/week x 3/52, introduction, instrumental music, exercises with music

Table 1. Change of total Neuropsychiatric Inventory scores from baseline.

• • • • •	, ,		
Difference in NPI scores	Mean (SD) for MT group (n = 14)	Mean (SD) for UC group (n = 14)	z Score
Between baseline and after MT period	15.64 (11.71)	0.29 (0.73)	4.58*
Between end of MT period and 3 weeks later	-15.57 (11.10)	0.29 (0.91)	4.53*
Between baseline and 3 weeks after MT ended	0.07 (2.16)	0.57 (0.76)	1.44
Abbreviations: $NPI = Neuropsychiatric Inventory; M. * p < 0.001.$	T = music therapy; UC = usual c	care.	

Tuet, et al. Hong Kong J Psychiatry 2006;16:87-91

Examples of local studies (3)

- Aromatherapy
 - 70 dementia patients
 - Cross-over randomised trial: active group (lavender inhalation) vs control group (sunflower inhalation)

Table 2. Cl periods	hanges in	CNPI and	CCMAI	scores	after	treatment
		CN	PI		(CMAI
Before TxA	**	24.68(10.54)		63.	17(17.81)
After TxA*	*	17.77 (7.52)		58.7	7 (16.74)
Before TxB		24.33 (10.08)		63.9	4 (17.67)
After TxB [†]		24.41 (10.24)		63.9	0 (17.73)
TxA = lavender treatment; TxB = placebo treatment. **paired <i>t</i> -tests, $p < 0.001$;						

[†]paired *t*-tests, p > 0.05.

Future directions

PERSPECTIVE

Alzheimer's & Dementia THE JOURNAL OF THE ALZHEIMER'S ASSOCIATION

Lin, et al. Int J Geriatr Psychiatry 2007;22:405-410

Toward a theory-based specification of non-pharmacological treatments in aging and dementia: Focused reviews and methodological recommendations

- Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART)
 - Non-Pharmacological Interventions Professional Interest Area group
- Overall evidence supports the efficacy of most NPTs but quality of some evidence is low
- Address issues related to the design, methodology, and reporting of studies of NPTs, eg Rehabilitation Treatment Specification System

Thank you

