A Cognitively Active Lifestyle program
On Elderly with cognitive impairment

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01 Global and Local situation of dementia

02 Protective factors and strategies to reduce RR of dementia

03 Occupational Therapy Lifestyle based intervention (CAL)

04 Future direction
“(Dementia) I can think of no other condition that has such a profound effect on loss of function, loss of independence, and the need for care.”

“This care is immensely challenging, physically, psychologically, and financially. People with dementia need services and support. Caregivers also need services and support.”

“Studies in wealthy countries show that the social and economic costs of dementia exceed those of other chronic diseases, like cancer and heart disease.”

WHO Director-General addresses G8 dementia summit
Dr Margaret Chan
Director-General of the World Health Organization
G8 dementia summit
London, United Kingdom
11 December 2013
Consequence of Dementia in HK

1. **Physical Consequence**
   - Significant association with functional disability
   - Elevated hip # occurrence
   - 28,600 year of healthy life (DALYs) were lost in 2006

2. **Psychosocial Consequence**
   - A recent survey shows there is likely stigma related to dementia (DH, 2010)

3. **Economic Consequence**
   - The direct cost of hospital admission due to dementia HKD$228 million in 2010, to HKD$594 million in 2036
   - The attributable cost of hospitalization: $2.9 billion in 2010, to $7.6 billion in 2036.

*(Jean Woo (Ed), Aging in Hong Kong: A Comparative Perspective).*
Local situation

- According to a study conducted by DH & CUHK in 2006, around 9.3% of elders aged 70 or above living in the community suffered from dementia.

- It is projected that 77,000 demented elderly persons aged 70 or above in the community by 2019.
Lifestyle modification

- There is no cure for dementia
- There is growing evidence that addressing modifiable risk factors can reduce the risk of delaying the onset of dementia
- Epidemiological research shows that certain lifestyle factors consistently lower risk of developing dementia.
- Mental, physical and social activities are associated with reduced dementia risk.

Figure 2. An active and socially integrated lifestyle in late life might protect against dementia. (From Fratiglioni L, Paillard-Borg S, Winblad B. 2004; modified).
A study in Sweden

- A 9 years longitudinal study on leisure activities and their influence on Dementia development in healthy elderly

- Multi-adjusted RRs of dementia for subjects with:
  - high mental, were 0.71 (95%CI)
  - High physical were 0.61 (95%CI)
  - High social were 0.68 (95%CI)

- The most effective was subjects with high scores in all or in 2 of the components 0.53 (95%CI)

Paillard-Borg, 2009
Evidence of protective factors

• Cognitive activities
  • induces neurogenesis and synaptogenesis,
  • Enhance hippocampal synaptic reactivity, cerebrovasculature and reduces brain b-amyloid deposition.
  • reorganization of neurocognitive networks, and increase activity in brain regions (i.e. prefrontal cortical regions) subserving executive functioning
Midlife Activity Predicts Risk of Dementia in Older Male Twin Pairs

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Abstract

Background—Prospective study of dementia to elucidate mechanisms of disease risk factors amenable to modification and specifically to determine whether midlife cognitive and physical leisure activities are associated with delayed onset or reduced risk of dementia within older male twin pairs.

Method—Co-twin control design using prospectively collected exposure information to predict risk of dementia 20–40 years later.

Setting—Community-dwelling and nursing home residents living throughout the continental United States.

Participants—147 male twin-pairs who were discordant for dementia or age of dementia onset and were members of the NAS-NRC Twin Registry of World War II veterans and participants in the Duke Twins Study of Memory in Aging.

Main Outcome Measure—Diagnosed dementia using a two-stage screen and full clinical evaluation.
Evidence of Mind body

• an 1 Year RCT on mind-body exercise for MCI had shown the protective effect of MB Ex (Lam et al, 2012)

• Cross-sectional studies found practicing MB appears might help to preserve memory in older adults
• (1) psychosocial indicators
  • associated with socialization and environmental enrichment,
  • visualization and focused internal awareness to strengthen, relax, and integrate the body and mind
• (2) physiological responses
  • Produce similar effects to those regular cardiovascular exercises and as an alternative for the elderly
  • enhanced cerebral perfusion
  • Helps to increase volume of both gray and white matters (Kwok et al, 2011)
Lifestyle intervention for MCI in Occupational therapy Department in UCH
Cognitively Active Lifestyle Program
強化認知生活模式小組
Aims and Objectives

To empower patients to develop a cognitively healthy lifestyle to build up cognitive reserve and delay cognitive decline, through:

- i) performing daily cognitive activity
- ii) participation in social activity
- iii) practicing daily MB ex
4 Themes

- Mind your head (動動手)
- Mind your social life (動動口)
- Mind your body (動動身體)
- Mind your mood (樂無憂)
Methodology

Selection criteria:

• Elderly screened in UCH OT department and showed objective evidence of cognitive impairment in neuropsychological ax (e.g. CACER, HKMoCA, CMMSE)

• Presented with symptoms of mild cognitive impairment or early dementia (Functional Assessment Staging Test stage 3 or 4)

Treatment

• 6 week program
• Weekly center based program +Daily home program
In each session

- **Physical Component**
  - Mind Body (Health Qi-gong training) (15 mins)

- **Social Component**
  - Play/ leisure (20mins)

- **Cognitive component**
  - Word bubble worksheet (20mins)

- **Home program**
  - Daily MB Ex log and worksheet
Mind body Ex (健身氣功)

第一式  托天  口訣：畫個弧形，點點頭

第二式  單舉  口訣：左手舉，右手按

第三式  後朝  口訣：左望右望，乜都無

第四式  攢拳  口訣：出拳倒水抹窗關窗
Let’s Play!
Let’s talk!

Planing a trip to the Peak. (session lead by a retire geography teacher)
Let me show off

Picture drawn by a group member, a retired Chinese vase painter.
Cognitive stimulating worksheet

- Word bubbles
  - Abstract thinking/mental flexibility (executive function)
  - Semantic memory (temporal lobe and frontal cortex function)
Results

• In 2014
• 25 cases has complete the course
• Gender: M (n=8), F (n=17)
• Age: 61-85 (mean: 73.8)
## Outcome evaluation

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<th>Baseline</th>
<th>Post intervention</th>
<th>P value</th>
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<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td></td>
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<tr>
<td>*<em>CMMSE</em> **</td>
<td>23.12 ± 3.59</td>
<td>24.76 ± 3.41</td>
<td>.000*</td>
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<td><strong>Verbal Fluency Test</strong></td>
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<tr>
<td>- Animals</td>
<td>9.56 ± 3.42</td>
<td>10.52 ± 2.97</td>
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<td>- Fruits*</td>
<td>7.72 ± 3.18</td>
<td>9.32 ± 3.57</td>
<td>.002*</td>
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<tr>
<td>- Vegetables*</td>
<td>8.04 ± 3.38</td>
<td>9.76 ± 3.83</td>
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<td>- Total*</td>
<td>24.16 ± 10.16</td>
<td>29.68 ± 9.62</td>
<td>.000*</td>
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<td><strong>Digit span forwards</strong></td>
<td>6.80 ± 1.47</td>
<td>7.16 ± 1.10</td>
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Discussion

• The study group showed significant improvement in MMSE and CVFT score

• Literature suggested a stable CMMSE and CVFT in 2 years predicted a 91% chance of maintaining stable cognitive state at five years (Wong et al, 2013)

• Modelling suggests that if the average onset age could be delayed by 5 year, incidence would be halved by 2050. (Dementia Risk Reduction, 2012)
How might it work:

- The group emphasizes on maximizing the spare function of participants and create a sense of wellness.
- Providing a stress-free training (make things simple and easy to them).
- Supportive environment allows them to be independent.
The adverse effect of stress

• Stress down regulates the hippocampal corticosteroid receptors and leads to corticosterone hypersecretion.
• Which in turn dampens the feedback inhibition of the adrenocortical axis leading to further hypersecretion.
• Finally causes permanent loss of hippocampal neurons.  
  \((Paillard-Borg, 2009)\)

• Elderly can engage and participate better in stress-free environment
Future direction

- Prevention of dementia is a long battle
- Continuity of care in community is important
- Bridging cases to community partners and continue home based training will be beneficial
Fact no. 1
~ Dementia is not a normal part of ageing. ~

(10 facts on Dementia, WHO)

Thank you for your attention


5. La Rue, A. Healthy brain aging: Role of cognitive reserve, cognitive stimulation and cognitive exercises. In AK Desai (Ed), The healthy aging brain: Evidence based methods to preserve brain function and prevent dementia, Clinics in Geriatric Medicine, 2010.


7. Yunhwan Lee a,b, Jinhee Kim a,b, Joung Hwan Back. The influence of multiple lifestyle behaviors on cognitive function in older persons living in the community. Preventive Medicine 48 (2009) 86–90
