



Dementia Prevention and Treatment: An Asian American Perspective

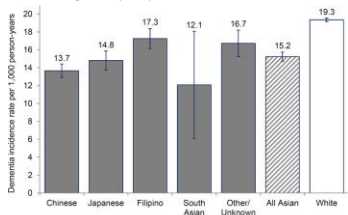
24th Annual Asian American Mental Health Training Conference
October 11th, 2018

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Dementia is a growing source of morbidity

- 50M people in the world have dementia
- Approximately 5.4 million Americans of all ages had AD in 2016
 - 5.2M aged 65 and older
- Cost of dementia was about 200B
 - Medicare paid approximately 11B
- In CA alone, more than 1M unpaid caregivers serving loved ones with dementia
- Numbers are growing
 - 135M by 2050
 - Largest growth in Asia

14-year dementia incidence between Asian American subgroups (Alzheimer Dis Assoc 2017)



Mayeda et al. Heterogeneity in 14-year Dementia Incidence Between Asian American Subgroups. Alzheimer Dis Assoc 2017

View of Dementia: Vietnamese American Immigrants (N=102)

- 75% *incorrectly* believe dementia patients become unable to perform familiar tasks all *at once*.
- 70% *incorrectly* believe dementia patients are unable to recognize their families.
- 60% *incorrectly* believe dementia patients are unable to recognize time, place, and person all at once.

View of Dementia: Chinese American Immigrants (N=288)

- 60% *incorrectly* believe dementia *can't* be prevented.
- 62% *incorrectly* believe dementia *wouldn't* shorten life expectancy.
- 67% unable to identify some types of dementia *can* be treated.

Dementia

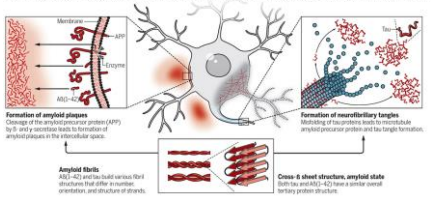
- Many causes of dementia
 - Vascular dementia
 - LBDs
 - Alzheimer's disease (Most common cause of dementia > age 65)

Symptoms	PLUS
<ul style="list-style-type: none"> • Memory 	<ul style="list-style-type: none"> • Word finding • Planning • Organizing • Depression • Apathy
- Slowly Progressive
Impact ADLs

When the Clock Stops Ticking



Molecular characteristics of Alzheimer's disease



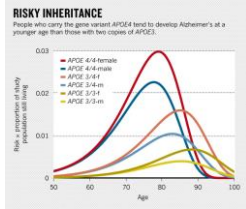
- Age-related cognitive impairment → Mild cognitive impairment (MCI) → Dementia

Dementia risk factors

- Genetics
- Lack of physical exercise
- "Western" diet – do not underestimate Lady M or Half & Half
- Medical conditions (DM, HTN)
- Sleep apnea
- Brain-slowing Meds (Benadryl, Benzos, Terazosin, Paxil, etc.)

Alzheimer's Genetics

- Sporadic AD (>98%) onset > 65 yo
 - Sporadic: Many genes + environment
- ApoE gene: ApoE4
- No family history: Lifetime risk ~ 15%
 - - E4 9%
 - + E4 30%



But only 40% Chinese and 50% Vietnamese American Immigrants believe some types of dementia are hereditary.

- Sporadic: Many genes + environment
 - ApoE gene: ApoE2/ApoE3/**ApoE4**
- If no family hx, lifetime risk ~15% (with E4 increased to 30%)
- One parent with AD: E3/E3: 30%; E3/E4: 45%; E4/E4: 60%



How to make a dx of AD

- History (r/o depression)
- Physical exam (r/o Parkinson's)
- Cognitive exam
- Brain MRI (r/o tumors)
- Blood: B12, thyroid, others

* Reached 85% accuracy

The AD8: Washington University Dementia Screening Test (informants or friends)

Interpretation of Results
 0-1: Normal cognition;
 2 or greater: Impairment in cognition

Remember, "Yes, a change" indicates that there has been a change in the last several years caused by cognitive (thinking and memory) problems.	YES, A change	NO, No change	N/A, Don't know
1. Problems with judgment (e.g., problems making decisions, bad financial decisions, problems with thinking)			
2. Less interest in hobbies/activities			
3. Repeats the same things over and over (questions, stories, or statements)			
4. Trouble learning how to use a tool, appliance, or gadget (e.g., computer, microwave, remote control)			
5. Forgets correct month or year			
6. Trouble handling complicated financial affairs (e.g., balancing checkbook, income taxes, paying bills)			
7. Trouble remembering appointments			
8. Daily problems with thinking and/or memory			

Alzheimer's & Dementia 14 (2018) 535-562
 2018 National Institute on Aging—Alzheimer's Association (NIA-AA) Research Framework
 NIA-AA Research Framework: Toward a biological definition of Alzheimer's disease

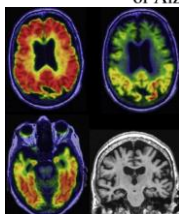


Fig. 1. Alzheimer's disease with dementia. A 75-year-old woman with amnesic mild-to-moderate dementia. Participant in the Mayo Alzheimer's Disease Research Center. Abnormal amyloid PET with Pittsburgh compound B (top left), tau PET with florbetapir (top right and bottom left), and atrophy on MRI (bottom right). Biomarker profile: A+T+(N)-.

Amyloid and tau detection with PET scans

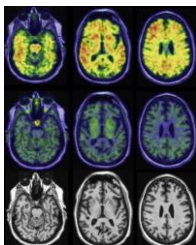
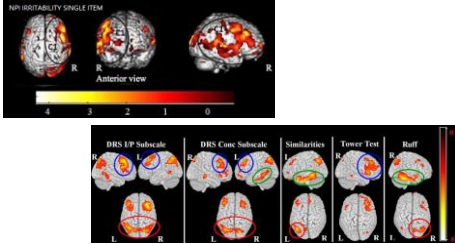


Fig. 2. Preclinical Alzheimer's pathologic change. A cognitively unimpaired 67-year-old man. Participant in the Mayo Clinic Study of Aging. Abnormal amyloid PET (Pittsburgh compound B, top row), no uptake on tau PET (with florbetapir, middle row), no atrophy on MRI (bottom row).

PET Imaging predicts neuropsychiatric symptoms



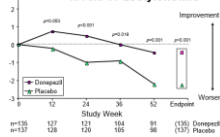
FDA approved treatments

Do not delay onset or slow progression

AD causes reduction in Acetylcholine



Cholinesterase inhibitors raise levels of acetylcholine



FDA approved treatments

Drug name	Brand name	Approved For	FDA Approved
1. donepezil	Aricept	All stages	1996
2. galantamine	Razadyne	Mild to moderate	2001
3. memantine	Namenda	Moderate to severe	2003
4. rivastigmine	Exelon	All stages	2000
5. donepezil and memantine	Namzaric	Moderate to severe	2014

Source: alz.org

Prevention Strategies

Family ask frequently, and new data is out every month!

- Cognitive exercise
- Diet
- Sleep
- Physical Exercise

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COULD BRAIN TRAINING PREVENT DEMENTIA?

By Dan Hurley July 24, 2016

In October of 2014 a group of more than seventy academics published what they called a [consensus statement](#), asserting that playing brain games had been shown to improve little more than the ability to play brain games.

Dementia breakthrough? Brain-training game 'significantly reduces risk'

Advanced Cognitive Training for Independent and Vital Elderly (ACTIVE) study

- Speed-of-processing training



Comparison of Online Information in Chinese and in English Languages (Cureus 2017)

- A google search was performed for the phrase “dementia” in simplified Chinese characters and in English.
- No statistical significance was observed between the prevalence of signs and symptom explanations and readability of the websites.
- The simplified Chinese search websites were more likely to be commercial.



Association of Daily Intellectual Activities with Lower Risk of Incident Dementia Among Older Chinese Adults

- 1349 of 15582 older adults developed dementia over the 6-year.

Table 4. Differences in Proportion of Participants Participating in Different Types of Leisure Activities at Baseline Between Those With and Those Without Incident Dementia at Years 4 to 6

Type of Leisure Activities	Incident Dementia, No. (%)		P Value*
	No (n = 10 750)	Yes (n = 761)	
Intellectual	7414 (69.0)	430 (56.5)	<.001
Social	8371 (77.9)	592 (77.8)	.96
Other recreational	10 498 (97.7)	749 (98.4)	.17

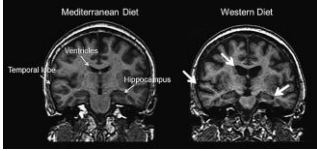
Intellectual (reading books, newspapers, or magazines; playing board games, Mahjong, or card games; and betting on horse racing). Social (joining a social center, participating in voluntary work, meeting relatives or friends, and attending religious activities), and Other Recreational (watching television, listening to radio, shopping, and going to a tea-house).

Diet and Cognition (from the Honolulu-Asia Aging Study)

- Examined midlife characteristics (nonsmoking, BMI, exercises, and healthy diet)
- Intake for fruit, vegetables (not including salted Japanese vegetables), fish, ratio of monounsaturated to saturated fat, and cereals (including rice, noodles, breakfast cereal, and bread, both whole and refined grains) and low intake for meat and dairy.
- Overweight and obesity in midlife have been linked with greater risk of dementia.

Mediterranean diet and cognition

- Eating primarily plant-based foods, such as fruits and vegetables, whole grains, legumes and nuts
- Replacing butter with healthy fats such as olive oil and canola oil
- Using herbs and spices instead of salt to flavor foods
- Limiting red meat to no more than a few times a month
- Eating fish and poultry at least twice a week
- Enjoying meals with family and friends





American Journal of Epidemiology
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Vol. 159, No. 10
Printed in U.S.A.
DOI: 10.1093/aje/kwh124

Midlife Dietary Intake of Antioxidants and Risk of Late-Life Incident Dementia The Honolulu-Asia Aging Study

- Intakes of beta-carotene, flavonoids, and vitamins E or C were not associated with modification the risk of late-life dementia.

However...

- Don't take away hope, but talk with their PMD as supplements may affect other medications.

Supplements

- Omega-3 Fish Oil:
 - Normal aging: no effect
 - MCI: 4/5 small studies w/mild improvement
 - AD: Only 1/6 small studies with minimal effect
- Vitamin E
 - Normal elderly: 400 IU/day: PREADVICE trial (2017) – no effect
 - Mild/mod AD: 2000 IU/day: 19% reduction rate decline in ADLs but no cognitive effects (Dysken et al., 2014)
- Vitamin D
 - While 3 small studies indicated improvement in executive functioning, we live in California...

Traditional Chinese Medicine

- According to the TCM, the brain is an outgrowth of and is nourished by the kidney. (*kidney stores essence to generate marrow*)
- Memory and cognitive are believed to be due to phlegm obstruction of the channels by blocking upper orifices.
- TCM also believe AD to be multifaceted.

Acupuncture

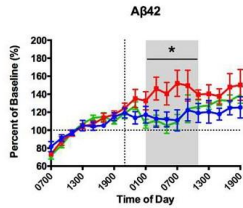
- Five studies involving 677 participants were analyzed.
- Acupuncture had mixed effects on cognitive functions.
- Acupuncture combined with western medications did not improve cognitive functions as measured by MMSE or MOCA in patients with mild cognitive impairment.

Sleep-disordered breathing:

- 1.9X odds MCI at 5 years (JAMA 2001)
- 1.7X odds dementia at 5 years (PLoS One 2013)



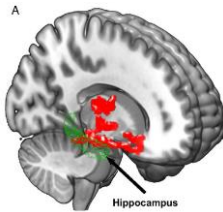
Sleep disruption increases CSF A β (Lucey et al 2018)



Total CSF A β (top) waned throughout the night in people who slept normally (blue) or who took a sleep aid (green), but rose 30 percent in those who stayed awake (red).
*likely due to elevated synthesis

Get some good sleep!

- Acute sleep deprivation impacts amyloid burden in right hippocampal regions.

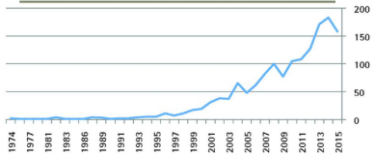


Exercise?



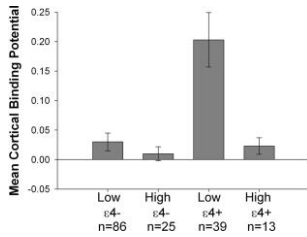
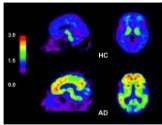
Tai chi

PubMed tai chi article citations by year: January 1974 to October 2015.



- 2 systematic reviews on tai chi for the treatment of cognitive impairment showed improvements in MMSE scores. (Better than physical activity for improving EF.)
- 1 recent short-term study in those with mild cognitive impairment did not find any improvement.
- Reduce the stress effects on brain health, nevertheless.

Exercise and amyloid reduction (Arch Neurol 2012)



- Exercisers (past 10 years, 30 min mod 5X/wk)
- Higher PIB binding in more sedentary individuals
- We were told that we can't do anything to our genes?

Exercise and dementia risk

- How much? 30 min/day, 5days/week – moderate levels
- Meta-analyses have consistently shown roughly a 40% reduced risk of AD
- If you have an hour with your elderly loved ones, walk and talk with them for an hour!

Mahjong



What does the Asian American general public understand about prevention and treatment of dementia?

- Normalization of memory loss in old age.
- Social-cultural attribution and causal attribution
- Lack of knowledge about course of dementia
- Sketchy knowledge about dementia treatment (esp issues with dementia caregiving group)
- Stigma + “face saving”

Dementia knowledge and information seeking of Chinese American Immigrants (JAGS 2013)

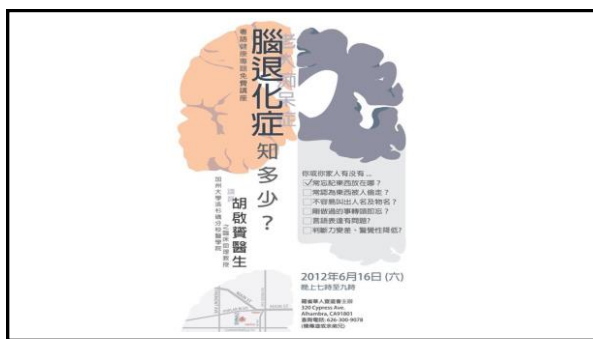
- Fifty (36%) of the 139 participants demonstrated interest in receiving further dementia education.
- Had lower dementia knowledge, were more likely to inaccurately believe that dementia is normal for aging, and were less likely to identify early signs of dementia.
- Lack of initiative to seek help may be a deficiency of appropriate language educational materials?
 - Also remember, willingness to follow doctor’s rec has nothing to do with speaking a language or high education.

Duration of residence and dementia literacy among Chinese Americans (IJSP 2014)

- 80 of the 151 respondents lived in the U.S. for < 20 years.
- Overall, the 2 groups did not differentiate on the total dementia knowledge scores.
- Except DOR < 20 years was associated with lesser understanding about how dementia may shorten the life expectancy after onset.

Exploring the role of YouTube in delivering dementia education to older Chinese (AJP 2018)

- In the first 2-year study period, YouTube reached 4333 viewers with a total watch time of 26554 min (an avg of 6.13 min).
- In the Year 2 period, YouTube achieved a longer total watch time, number of viewers, and reaching out to age group of viewers aged 55 and above.



Dementia Health Promotion for Chinese Americans (Cureus 2017)



Association between recognizing dementia as a mental illness and dementia knowledge among elderly Chinese Americans (WJP 2016)

- 29% of 316 elderly Chinese Americans identified dementia as a mental illness.
- When dementia was being perceived as a mental illness, such perception was associated with a higher level of baseline dementia understanding.
- There is the potential of improving older Chinese Americans dementia literacy by increasing awareness of its mental illness origin.



Poor caregiver mental health predicts mortality (PNAS 2017)

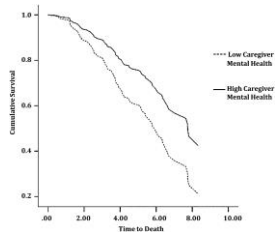


Table 1. Dementia Stigma Questionnaire Results (N = 89)

Question	n (%)
1. Most employers will fire a 65-year-old employee with this illness.	68 (76.4)
2. This illness is different from other physical illnesses (e.g., high blood pressure).	30 (33.7)
3. Research on the illness is nothing but a good way for pharmaceutical companies to make profits.	20 (22.5)
4. Increasing governmental spending to care for patient with this illness is a waste of money.	14 (15.7)
5. Most people will not want to be friends with people suffering from this illness.	44 (49.4)
6. It is difficult to communicate with people with this illness.	76 (85.4)
7. Only those with a low educational level would develop this illness.	11 (12.4)
8. I would avoid disclosing the truth if my relatives have this illness.	13 (14.6)
9. Patients with this illness would not understand other people's concerns or worry.	61 (68.5)
10. A patient with this illness is dangerous to self.	37 (41.6)
11. A patient with this illness is dangerous to others.	32 (36.0)
12. A patient with this illness is impulsive and unpredictable.	56 (62.9)
13. Patients with this illness should be institutionalized.	41 (46.1)
14. Health insurance policies should not cover any costs of this illness.	23 (25.8)
15. Society should not treat patients with this illness with more tolerance.	10 (11.2)
