Strategies for maintaining memory and brain health

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SO HOW'S THE MEMORY HOLDING UP?
ER...HAVE I JUST BEEN OR AM I JUST GOING?

BATHROOM
Strategies for memory

Acronyms
Chunking
Chaining
Method of loci
Strategies for maintaining memory

• Prevention of dementia – no or not yet
• Delay – more likely …
• … Ideally till after we die
• What is good for our heart is good for our brain
• Lifestyle factors important
• 35% of attributable risk can be accounted for by environmental factors that …
• ….we can all do something about
Preventing dementia

Livingston G et al, Lancet 2017

35% of risk of dementia

- Low education 8%
- Hearing loss 9%
- Hypertension 2%
- Obesity 1%
- Smoking 5%
- Depression 4%
- Physical inactivity 3%
- Social isolation 2%
- Diabetes 1%
Association is not cause!

- Example: Diabetes associated with dementia
- But if we compare rates of dementia in a population of people with diabetes with a similar population without diabetes, percentage will be higher in diabetics
- Calculate an Odds Ratio \(\rightarrow\) percentage increase risk

BUT ........

- Most people who develop dementia don’t have diabetes
- Most people with diabetes don’t develop dementia
• Mid-life hypertension associated with late-life dementia
• Treating blood pressure decreases risk in some studies
• Each year of treatment decreases risk
• New data – systolic 120 better than 140, BUT ….
• Can harm if lower BP too much in older old
The more vascular risk factors the greater AD/ dementia risk
• High blood pressure
• Smoking
• High cholesterol
• Obesity
• Diabetes
• Physical inactivity

Luchsinger et al 2005

Number of risk factors

Slide adapted from Michael Valenzuela
Physical activity benefits

- Improved fitness
- Improved physical health - ↓ heart disease, Hi BP, diabetes, some types of cancer, osteoporosis, sarcopenia
- Reduced morbidity & mortality
- Improved mental health
- Improved confidence, quality of life
Physical activity = Protective

- Physical activity protective against cognitive decline, dementia, Alzheimer’s, vascular dementia
- At least three times per week
- At least 150 minutes per week
- More is better – puffed, weights
- Start slowly, build up gradually
- Check with your doctor

Never too late, never too early

Mixed aerobic + anaerobic better
Brain Training

- Crosswords, Sudoku - ?not enough
- Computerised cognitive training
  - Benefits √.... *But* ..
  - For which older people?
    - Healthy √
    - Mild Cognitive Impair √
    - Dementia X
  - Do benefits generalise?
  - Are benefits sustained?
Obesity in Mid-Life
Mid-Life Obesity

• Compared to normal weight, midlife obesity increases risk of dementia later in life
  • BMI 25-30: 34% increased risk
  • BMI > 30: 91% increased risk

• Obesity paradox: In late life being overweight is not a risk factor, may be protective
Mind your diet

- Mediterranean diet
What is Mediterranean-style diet?

- Abundant plant foods
- Fresh fruit as typical daily dessert
- Olive oil as principal source of fat
- Dairy products (cheese, yogurt)
- Fish and poultry - low to moderate
- 0 - 4 eggs week
- Red meat - low amounts
- Wine - low to moderate amounts
- Total fat = 25% to 35% of calories
- Saturated fat ≤ 8% of calories
Smoking, Alcohol and Natural therapies

• Current smoking increases risk
• Heavy alcohol bad for the brain
• Mild-moderate alcohol may be beneficial but …
  • evidence weak
  • alcohol linked to cancer
• No evidence for natural therapies
Hearing loss

- Risk 55% - 167% higher in people with peripheral hearing loss
- Accounts for 9% of population attributable risk for dementia
- Could mechanism be through less social participation??
Do hearing aids help?

- 25-year prospective study – ↑dementia incidence if self-reported hearing problems except if use hearing aids¹
- Cross-sectional ELSA: hearing loss associated with worse cognition if not using hearing aids; mediated by social isolation²
- For people aged >50, tested 2-yearly over 18 years, immediate & delayed recall deteriorated less after initiation of hearing aid use³

³Maharani A, JAGS 2018; 66(6): 1130-6
Social isolation
Socialisation and dementia

- Less frequent social contact, less social participation, and more feelings of loneliness associated with …
  - … 57% increased risk of dementia
- Good social engagement 22% ↓ risk
- WHO: Insufficient evidence but … social participation and support strongly connected to good health & wellbeing throughout life

Penninkilampi R, Casey A-N, Fiatarone-Singh M, Brodaty H. 2018
WHO Report on Risk reduction 2019
Sleep and dementia

• About 1-in-2 older adults have regular insomnia
• About 1-in-2 older adults have sleep-disordered breathing
• Slow wave sleep associated with ↓amyloid-β protein clearance from brain in animal and human studies
• Sleep-disordered breathing associated with poor sleep
• Poor sleep associated with worse cognition
• Can correcting insomnia and sleep-disordered breathing prevent or delay dementia?
• Does incipient dementia cause sleep disorders?
Air Pollution

- Perhaps small contribution
- Insufficient evidence

“Air Pollution Robs Us of Our Smarts and Our Lungs”
GIBBENS S, National Geographic, 2018
9/10 people breathe in polluted air
But…. How reliable are these findings?

• Most studies are observational or single interventions
• Reverse causality?
  • Alzheimer’s disease builds up in brain over 20+ years before it becomes clinically evident
  • Could incipient dementia lead to less cognitive activity, exercise, socialisation, etc
• Can intervention studies prove that adopting these recommendations decrease cognitive decline? Eg FINGER Study → cognitive benefits
RCT: Four basic modules

Physical activity

Brain training

Diet & nutrition

Depression/ Anxiety
Almost 100,000 participants 55-77yo from 45 and Up study contacted \( \rightarrow \) about 12,000 responded

6236 participants randomised to coaching or information

Eligible for up to four modules depending on risk factors

First year finished October 2019

Boosters monthly for years 2 & 3

If successful \( \rightarrow \) less cognitive decline by Year 3

If more funding … less dementia by Year 8

… interaction with genetic markers
Doctors hail first drug to ‘slow down’ Alzheimer’s

Aducanumab (Biogen)

- 2015 Phase 1 trial - hopeful
- Two Phase 3 trials
- March 2019, Futility Analysis
  - Trials ceased, until….
- More data from other cases
- Re-analysis released now…
- Positive results in one trial
- Oct 2019 FDA (US) agrees to accept submission for approval

Await details
Availability… ??
Likely expensive
Strategies for people with dementia

- People living with dementia (PLWD) can live positively for many years
- Important to compensate for disabilities and build on assets
- Re-ablement model (like rehab after stroke)
- All lifestyle activities – keep active physically, cognitively and socially, eat well
- Tailor activities to person
- Peer support (Buddy, DAI, social club, PALZ)
THANK YOU

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