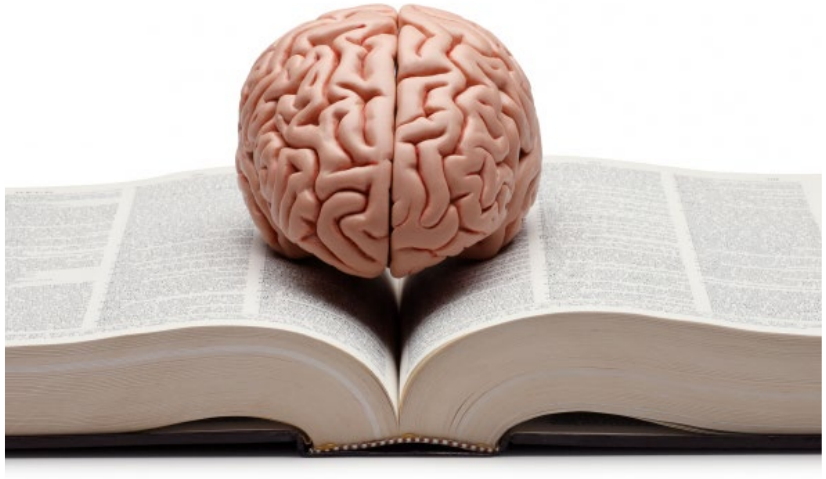

HEALTHY BRAIN AGEING AND BRAIN FITNESS

U3A Kingston 12 July 2021

Dr Nicole Kochan

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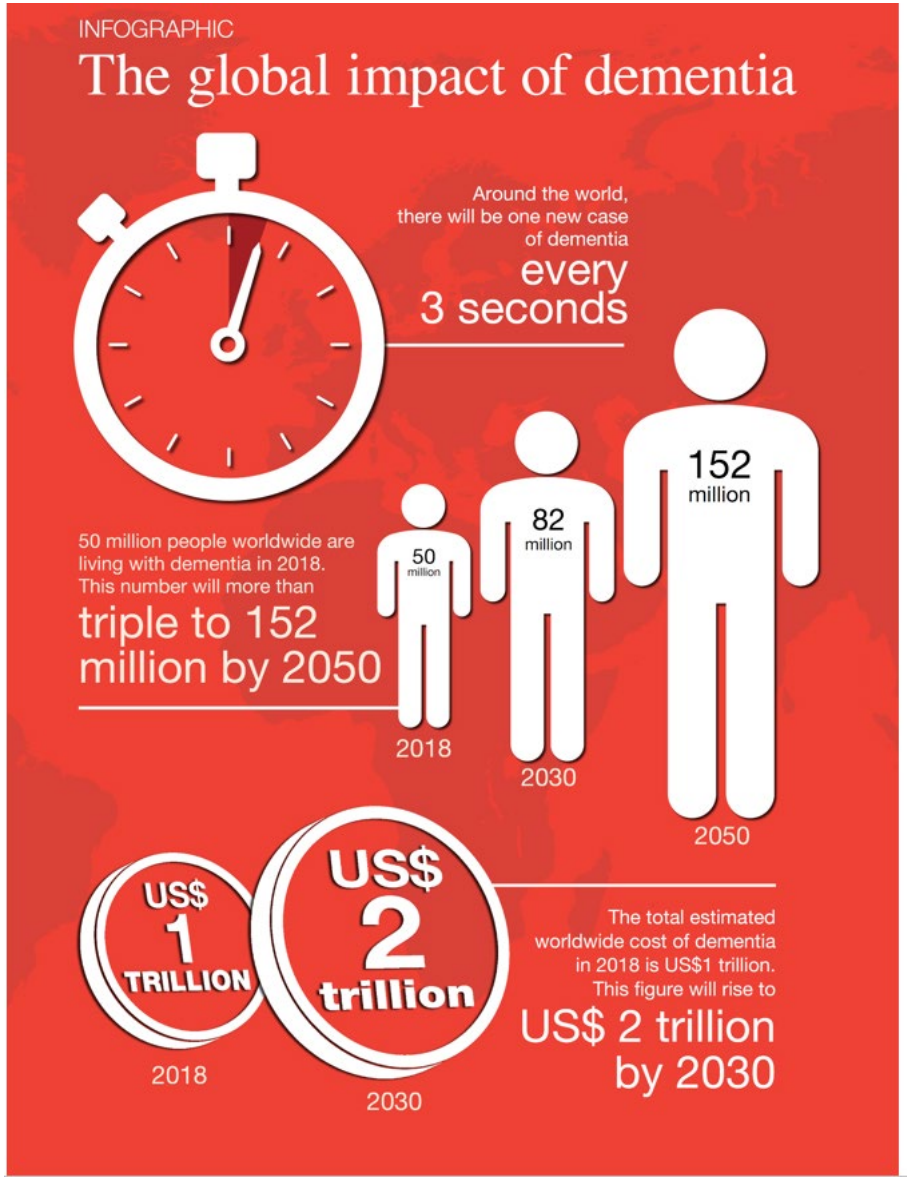
Centre for Healthy Brain Ageing (CHeBA), School of Psychiatry

Medicine and Health UNSW

Today's talk

- Ageing & Dementia: a few facts & figures
- Maintaining healthy brains, gaining mental fitness: the latest evidence
  - Protective factors against cognitive impairment
    - Cognitive reserve
  - Modifiable risk factors for cognitive impairment
  - Four pillars of a healthy lifestyle and possible Alzheimer's prevention
    - Mental activity
    - Physical exercise
    - Diet/nutrition
    - Sleep
    - Plus one more….



Alzheimer's Disease International
The global voice on dementia

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WHY?

Rapidly increasing ageing of the population

Projections of ageing popn Australia current → 2057:

65+ = 4.4M → 8.2M

85+ = 560,000→ 1.7M

Single biggest risk factor of dementia is age

but……

The incidence of new cases of dementia is falling??

Why is this topic so important?

The World Health Alliance was founded on 3 premises:

1. There is no health without brain health

2. Brain health and health begin with the mother and the child and their education

3. Our brains are our future!

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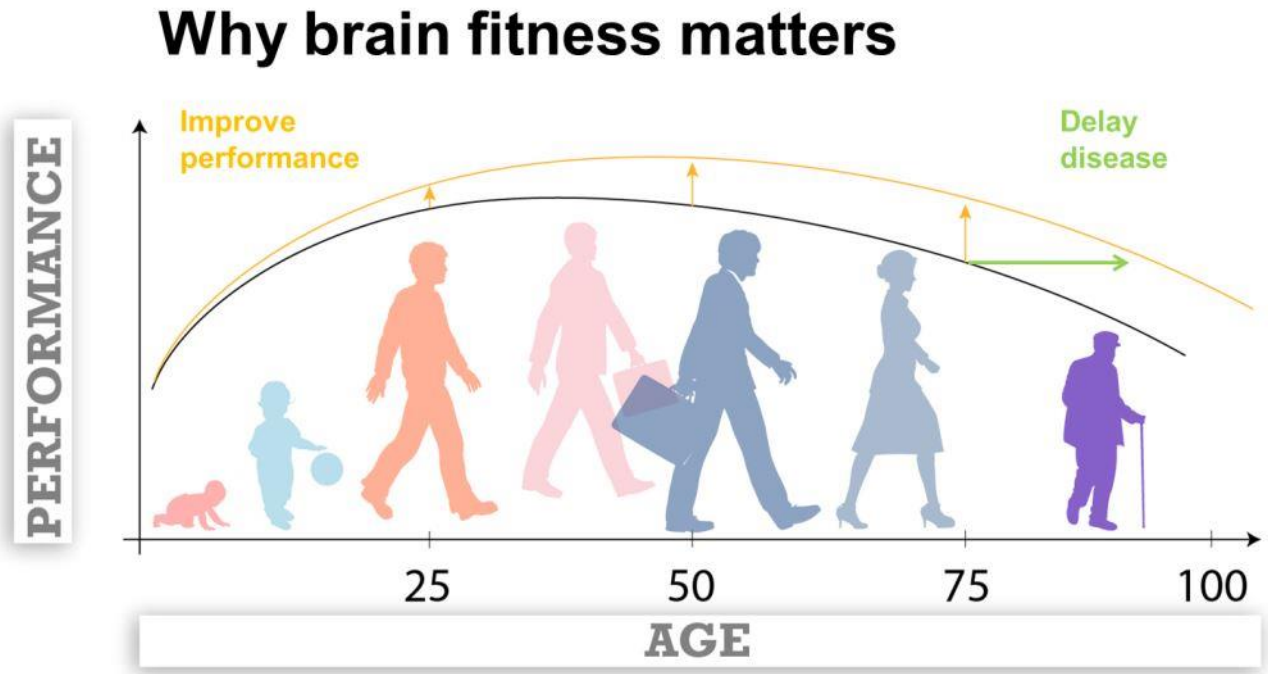

Image from SharpBrains.com (16.10.19)

SMH Good Weekend Oct 5 2019

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GENERATIONS – *Journal of the American Society on Aging*

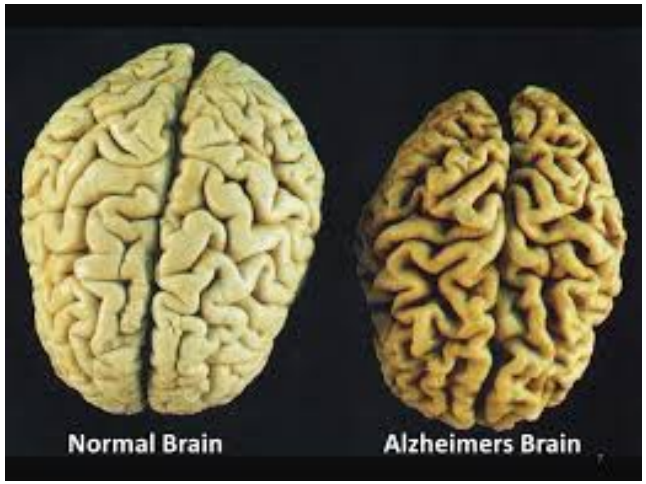
By Alvaro Fernandez

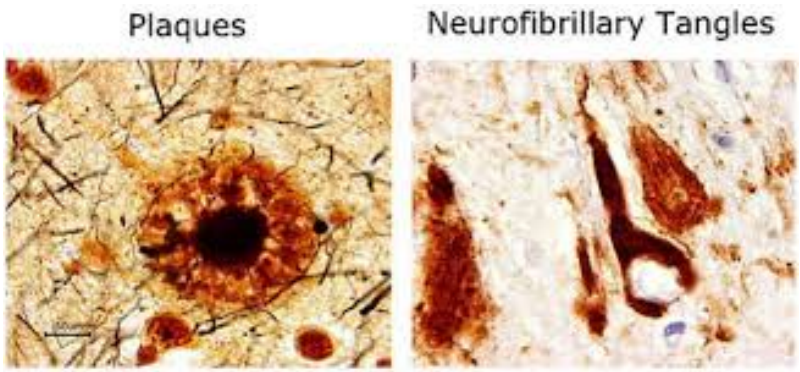
Solving the Brain **Fitness** Puzzle Is the **Key** to **Self-Empowered** Aging

> What works to preserve cognitive abilities? Much like the human brain, the answer is complicated, individual, and nuanced.

Protective factors against cognitive impairment

- Resilience against dementia?
- Some people with Alzheimer's changes in their brains do not have dementia.





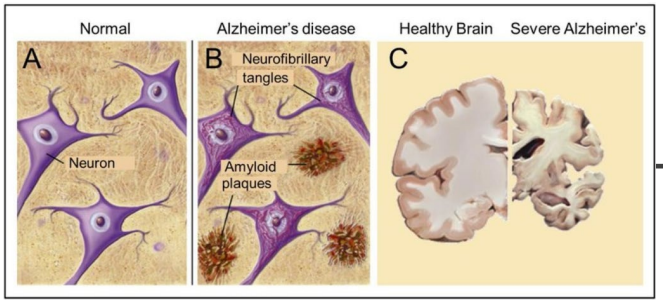
The Nun Study

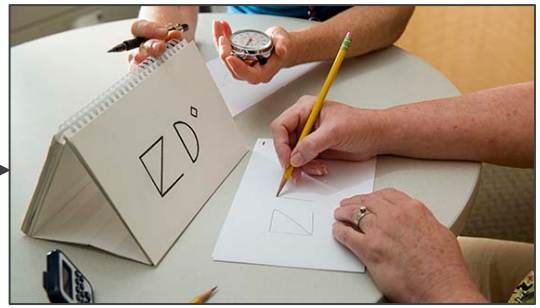
- 678 Sisters of Notre Dame across the USA
- Annual assessments of cognitive function
- Brains donated for neuropathological exam

The Nun Study

- Some brains showed all the physical signs of Alzheimer's, yet the nuns had no symptoms in life & remained physically sharp into very old age.
- Sisters who read, wrote and kept intellectually stimulated during their early life had a better chance of staving off dementia later in life.

Cognitive reserve





Reserve

Protective factors against cognitive impairment

- Resilience against dementia?
- Enriched lifetime experiences can help protect the brain against memory loss
- Observation that high education protects an individual from developing dementia

Cognitive reserve

an active & dynamic process that allows an individual to cope more successfully with disease-related brain changes.

Cognitive reserve CR reflects lifetime of:

education

occupational roles

mentally stimulating leisure activities

Cognitive reserve – a secret to coping with neurodegeneration in the brain.

- Recent study (JAMA Neurology 2019) showed that the protective effects of CR can build throughout the lifespan
- Those with high CR accumulated through education, early-life cognitive activities, mid-life activities, late life activities & social activities in late life had a reduced risk of dementia in a dose-dependent manner
- Reduced dementia risk even in individuals with high degrees of Alzheimer pathology and cerebrovascular pathology (like mini-strokes)

How flexible is your brain?

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Modifiable risk factors for dementia

Early life: less education

Mid-life: hearing loss

brain injury

high blood pressure

alcohol

obesity

Late life: smoking

depression

social isolation

physical inactivity

air pollution

diabetes

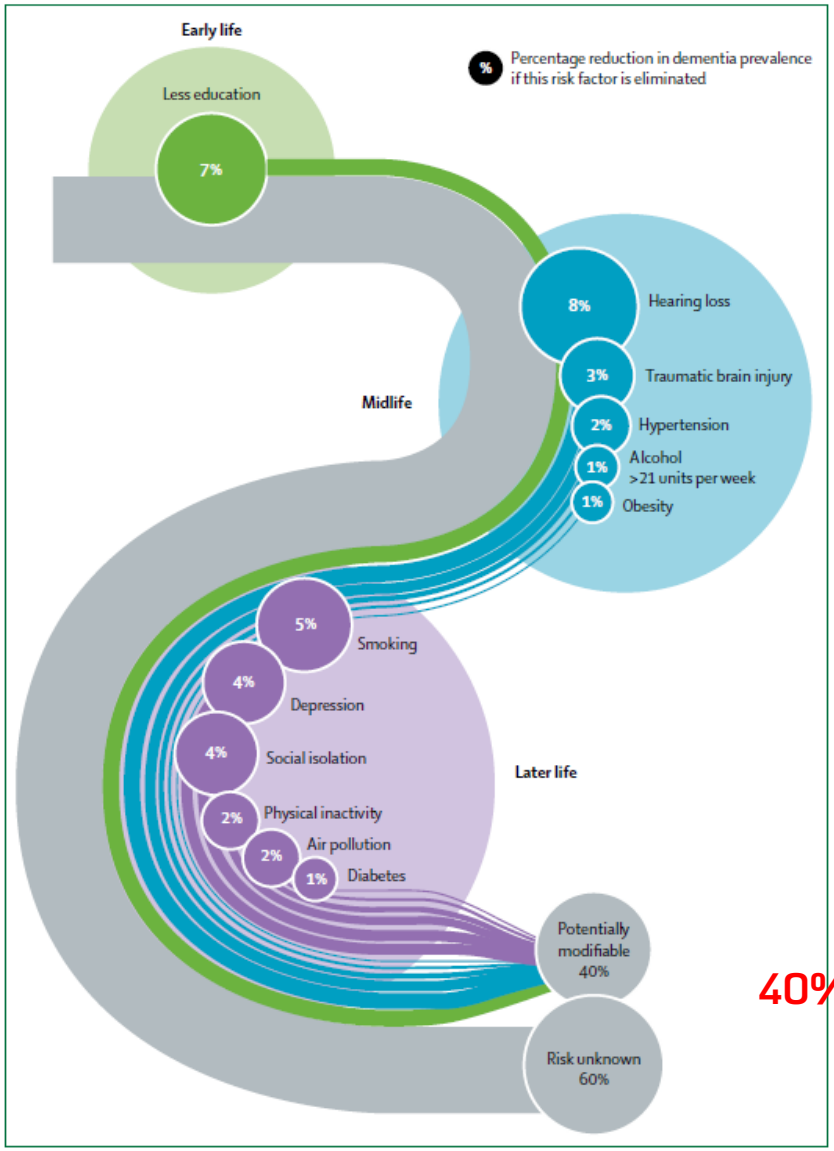

Figure 7: Population attributable fraction of potentially modifiable risk factors for dementia

40%

Livingston 2020 Lancet

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Four pillars of a healthy lifestyle to maximise brain fitness

1. Mental activity
2. Exercise
3. Diet/nutrition
4. Sleep

Plus one more –

Alcohol intake

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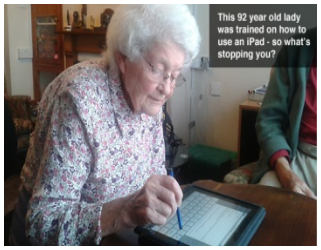
Mental activity

Taking on new skills such as hobbies late in life is beneficial

New research: learning digital photography or how to use an ipad improved memory

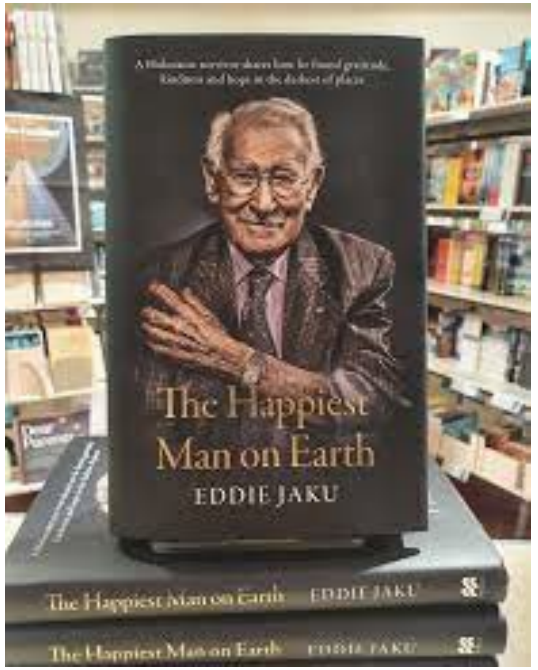


npj | Science of Learning

www.nature.com/npjscilearn

ARTICLE OPEN

Age is no barrier: predictors of academic success in older learners



Imlach A 2017 npj Science of Learning

New, challenging, enjoyable

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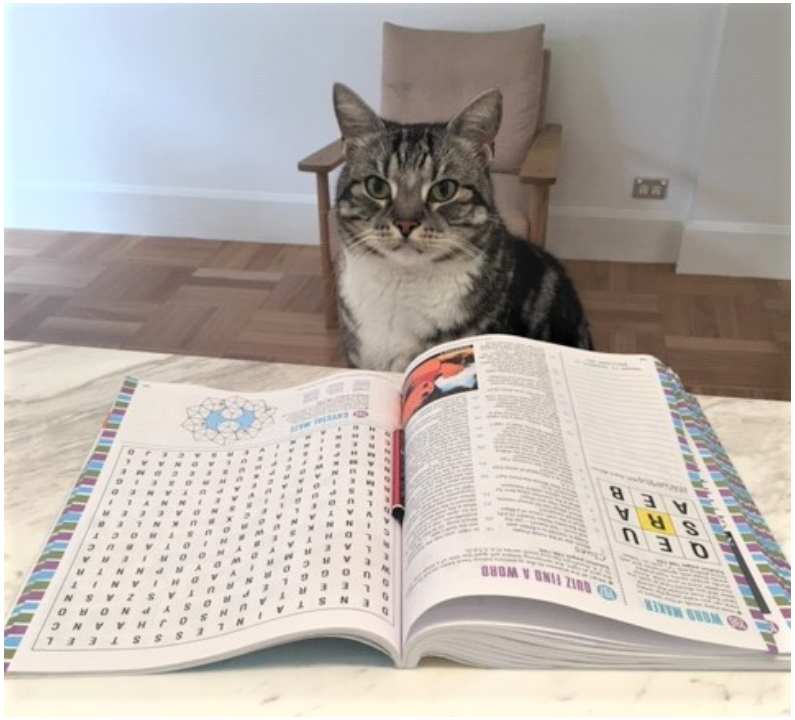

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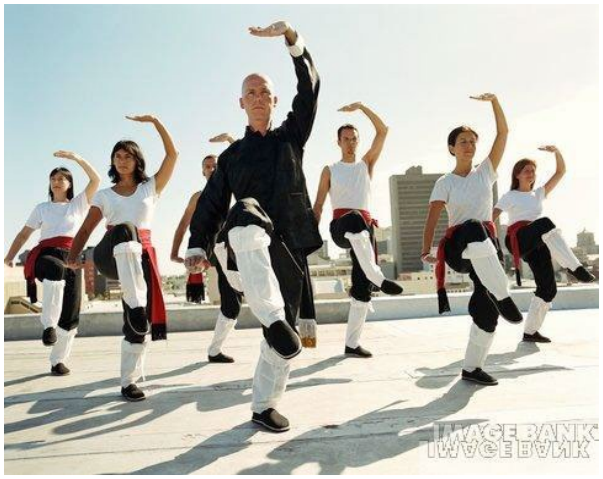
Physical exercise



Diet/ good nutrition

Mediterranean diet

Olive oil

Legumes

Vegetables

Oily fish

Low dairy & meat, low sugars, saturated fats, processed foods

MIND diet

Mediterranean-DASH diet Intervention for Neurodegenerative Delay (MIND) diet specifically designed to be neuroprotective.

Similar to MED diet but also emphasises vegetables including green leafy vegetables, nuts, berries, beans, whole-grains, fish, poultry, olive oil

https://www.neura.edu.au/news/mind-over-mediterranean-australian-study-suggests-mind-diet-reduces-the-risk-of-dementia/

MIND diet

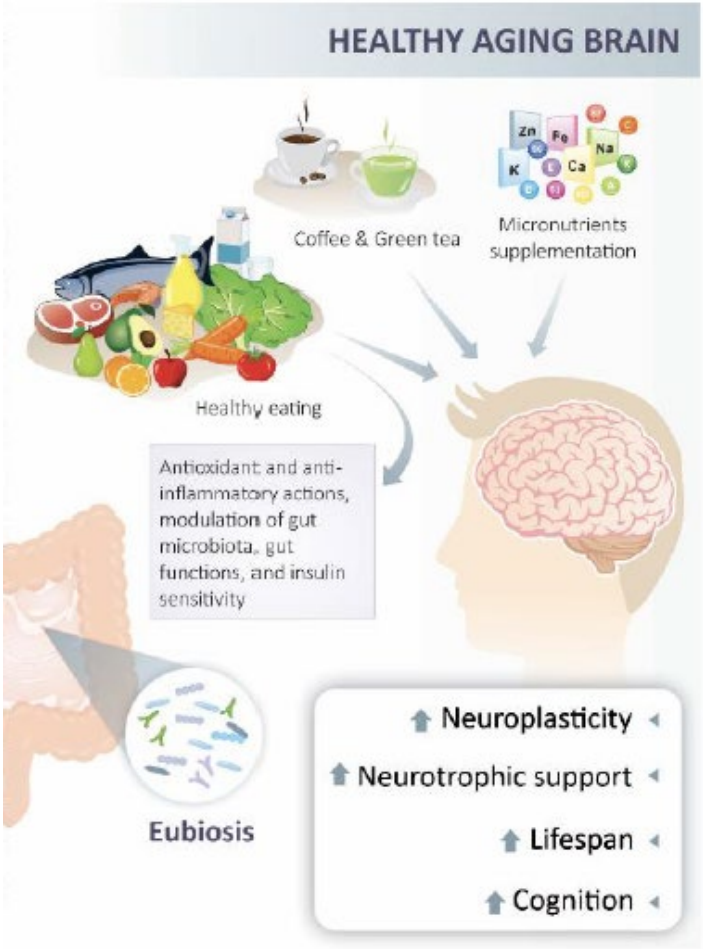
Improving gut health

↓

May improve gut-brain communication through microbiota-gut-brain axis

↓

Potential benefits in cognitive functioning and ageing



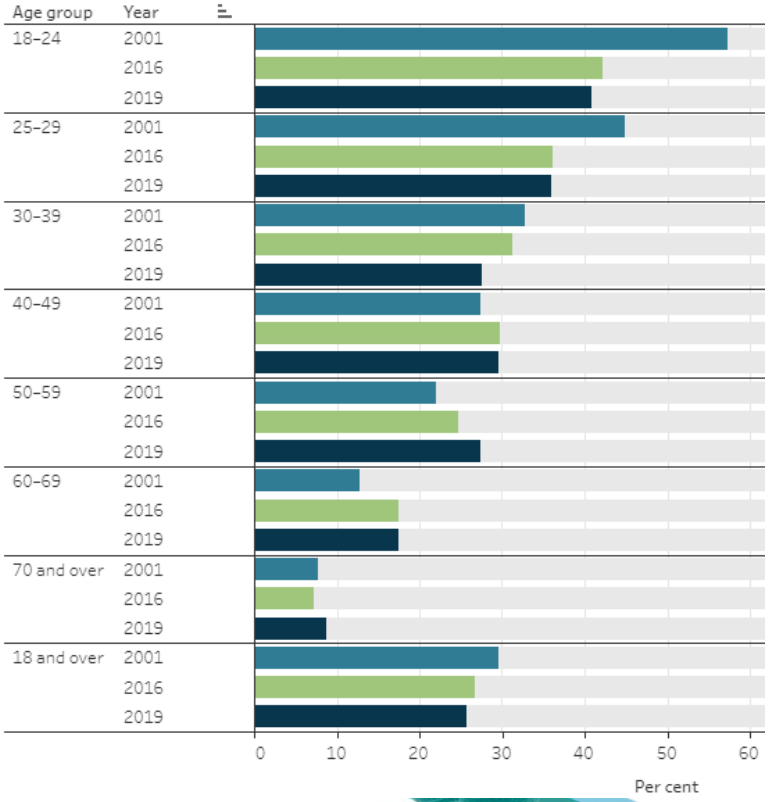
Melzer 2021 International Journal of Molecular Science

Sleep

One more pillar – Alcohol use

Age-based trends in alcohol use

Australian national data on proportion of people reporting risky drinking (5+ drinks/occasion) 2001-2019



- Recent decades have seen significant shifts in the epidemiology of alcohol use
- There are significant declines in the rates of alcohol use in young people
- But alcohol use and related harms are increasing in older people
- People in their 60s are the most likely to drink daily and the most likely to drink in a high risk pattern on at least 5 days/week
- Alcohol-related deaths, hospitalisations and other harms also on the increase in older people

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slide contributed by Dr Louise Mewton

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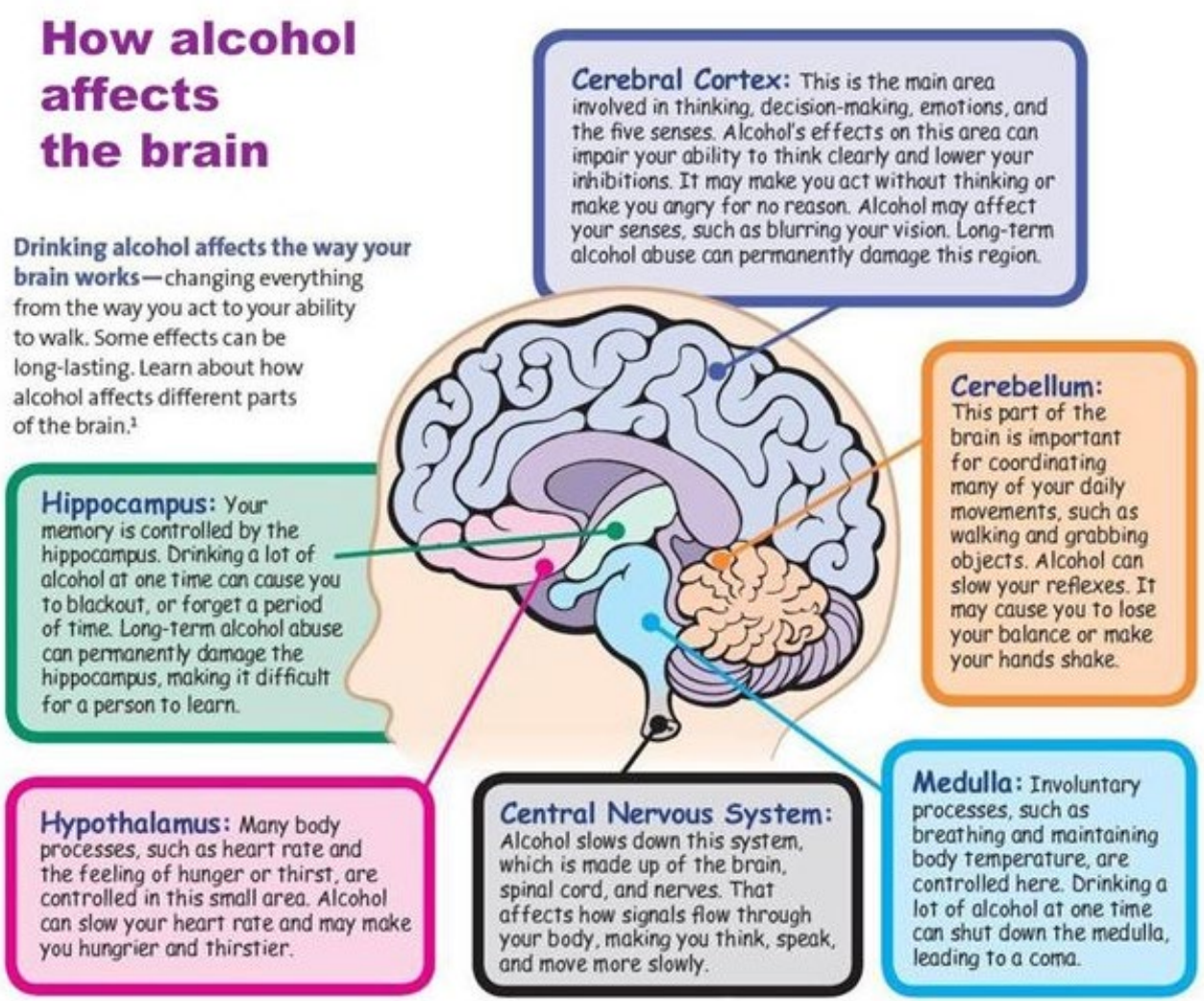
Alcohol and the brain: Acute effects



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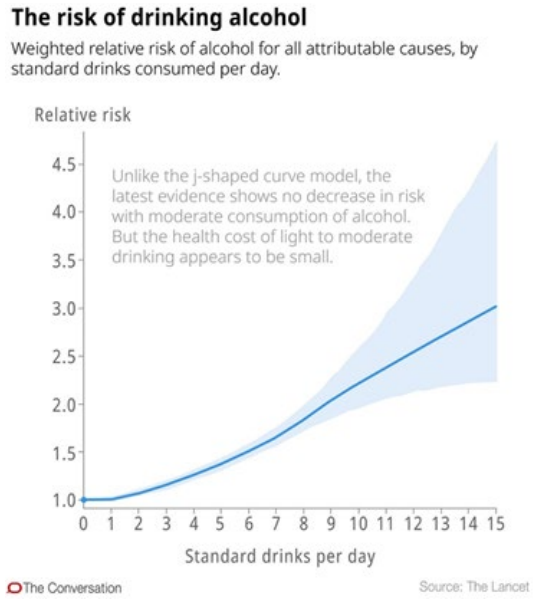
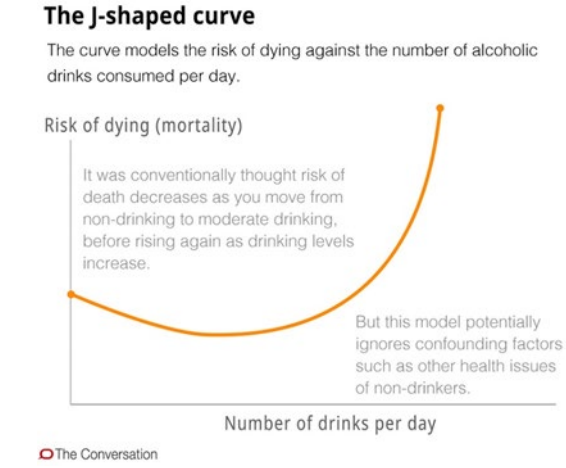
Moderate alcohol use and dementia

- *Chronic, heavy alcohol use* is related to dementia, but what about *moderate* use?
- For many health conditions, particularly cancer, alcohol consumption shows a linear dose-response relationship – there is no “safe” level of consumption
- For some health conditions, like dementia, there seems to be a “J-shaped” relationship with alcohol use
- Light-moderate alcohol use is protective when compared with abstaining, as well as heavier patterns of use
- Lowest risk of dementia: 4 drinks/week





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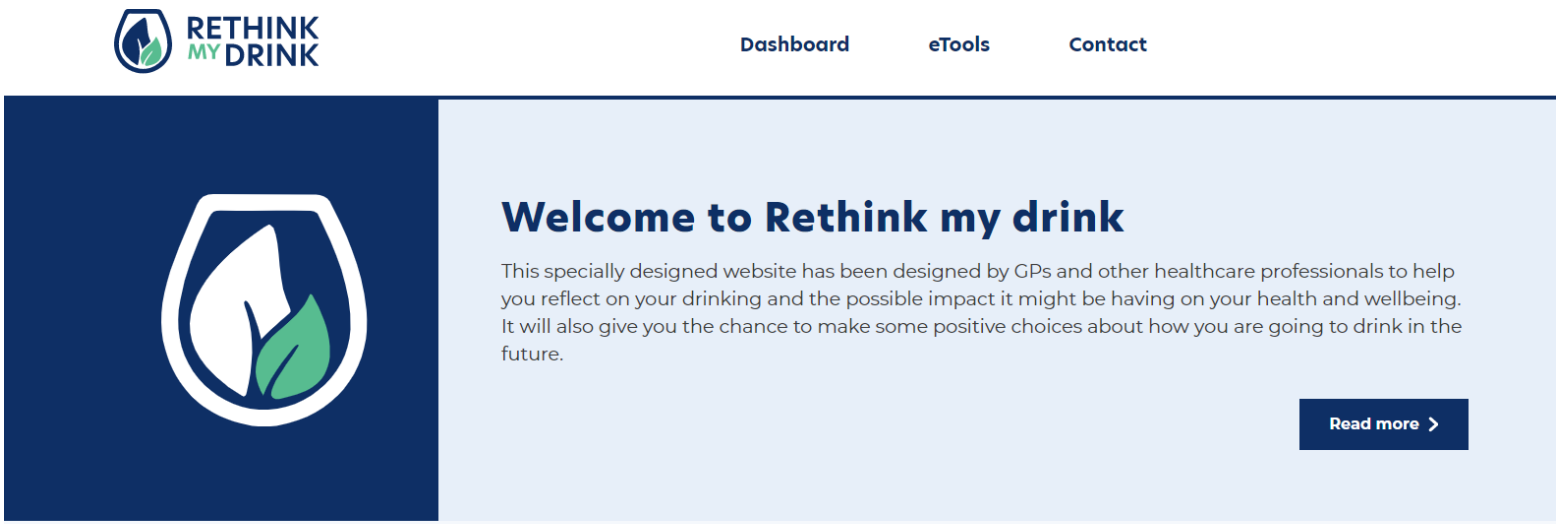

The research study is looking recruit people who meet the following criteria:

- ***Are aged 60-75 years.***
- ***Regularly consume alcohol***
- ***Have access to a computer and the internet.***
- ***Are based in Australia.***

TO EXPRESS INTEREST IN THIS STUDY OR LEARN MORE ABOUT JOINING PLEASE CONTACT THE RMD TEAM
E: RethinkMyDrink@unsw.edu.au
M: 0466 046 988

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Five pillars of a healthy lifestyle to maximise brain fitness

1. Mental activity
2. Exercise
3. Diet/nutrition
4. Sleep
5. Alcohol

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Thank you!

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