NON-PHARMACOLOGICAL STRATEGIES FOR DEMENTIA PREVENTION – UPDATES

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OBJECTIVES

1. To be able to identify risk factors for dementia in individuals and recommend targeted interventions, leveraging on programmes available in the community
2. To be aware of the model of care at Woodlands Health memory clinic and support services available to patients with early cognitive decline

OUTLINE

- Background
- Two-pronged approach to Dementia risk reduction
- Modifiable risk factors for Dementia and specific actions: Updates from Lancet Commission for Dementia 2024
- Local statistics and initiatives relevant to dementia risk reduction
- Study trip sharing: multi-domain interventions for Mild Cognitive Impairment
- Takeaways

BACKGROUND

- Dementia is a growing global public health problem
- As societies age, the number of people living with dementia across the world is expected to rise from 55 million in 2019 to 139 million in 2050 (WHO)
- While we have witnessed remarkable advances in recent years in the diagnosis and treatment of dementia, we are far from finding a cure and even further from having healthcare systems capable of disseminating a future remedy to all who need it

BACKGROUND

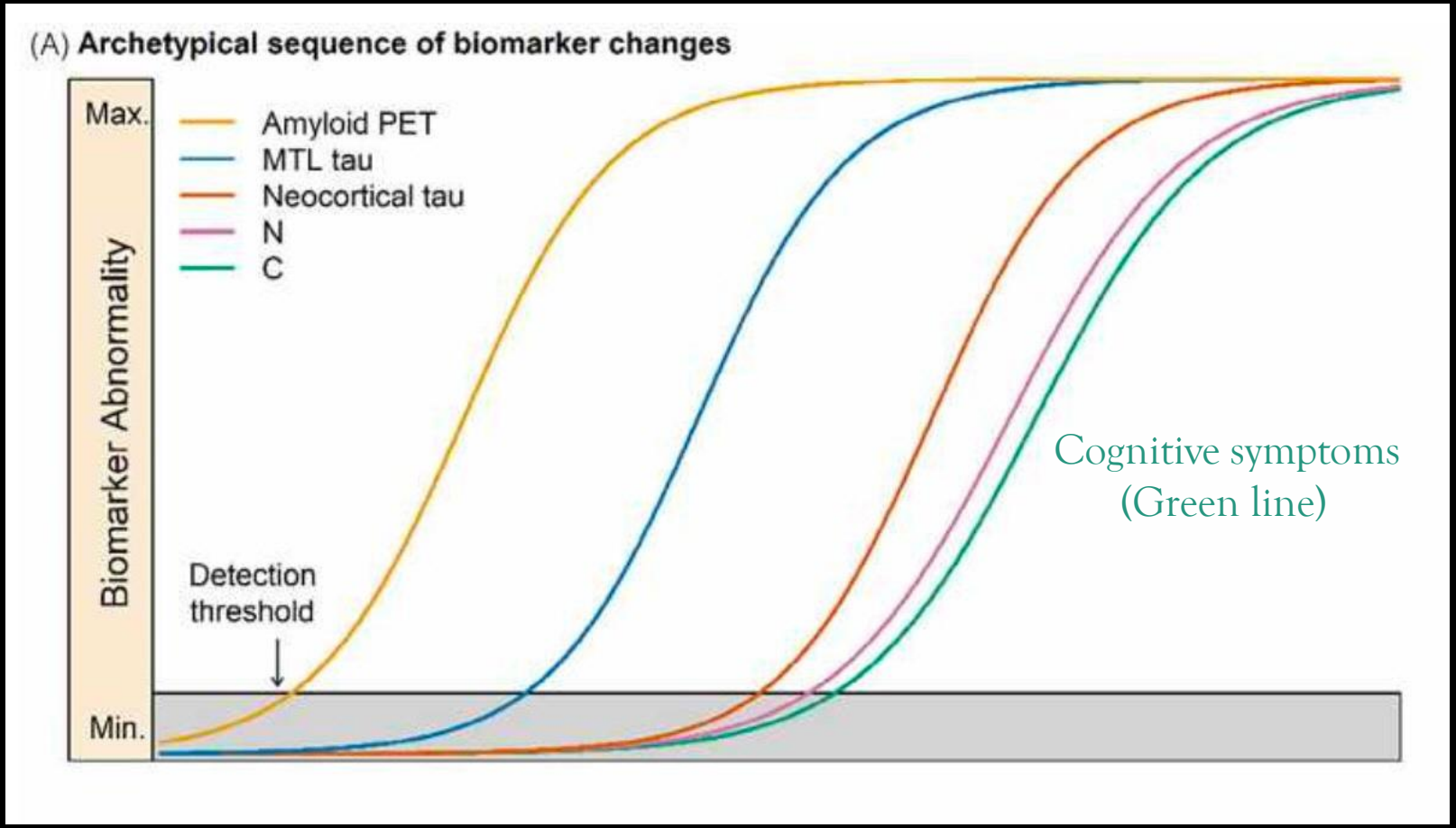
- During the last two decades, evidence has shown the relationship between development of cognitive impairment/dementia with several potentially modifiable risk factors
- The knowledge of these modifiable risk factors means that prevention is possible through a public health approach including implementation of key interventions that delay or slow cognitive decline

ALZHEIMER'S DISEASE COGNITIVE CONTINUUM

ALZHEIMER'S DISEASE COGNITIVE CONTINUUM

- Alzheimer's pathology: appearance of abnormal amyloid plaques and tau proteins in the brain
- Remains unclear exact cause of abnormal proteins

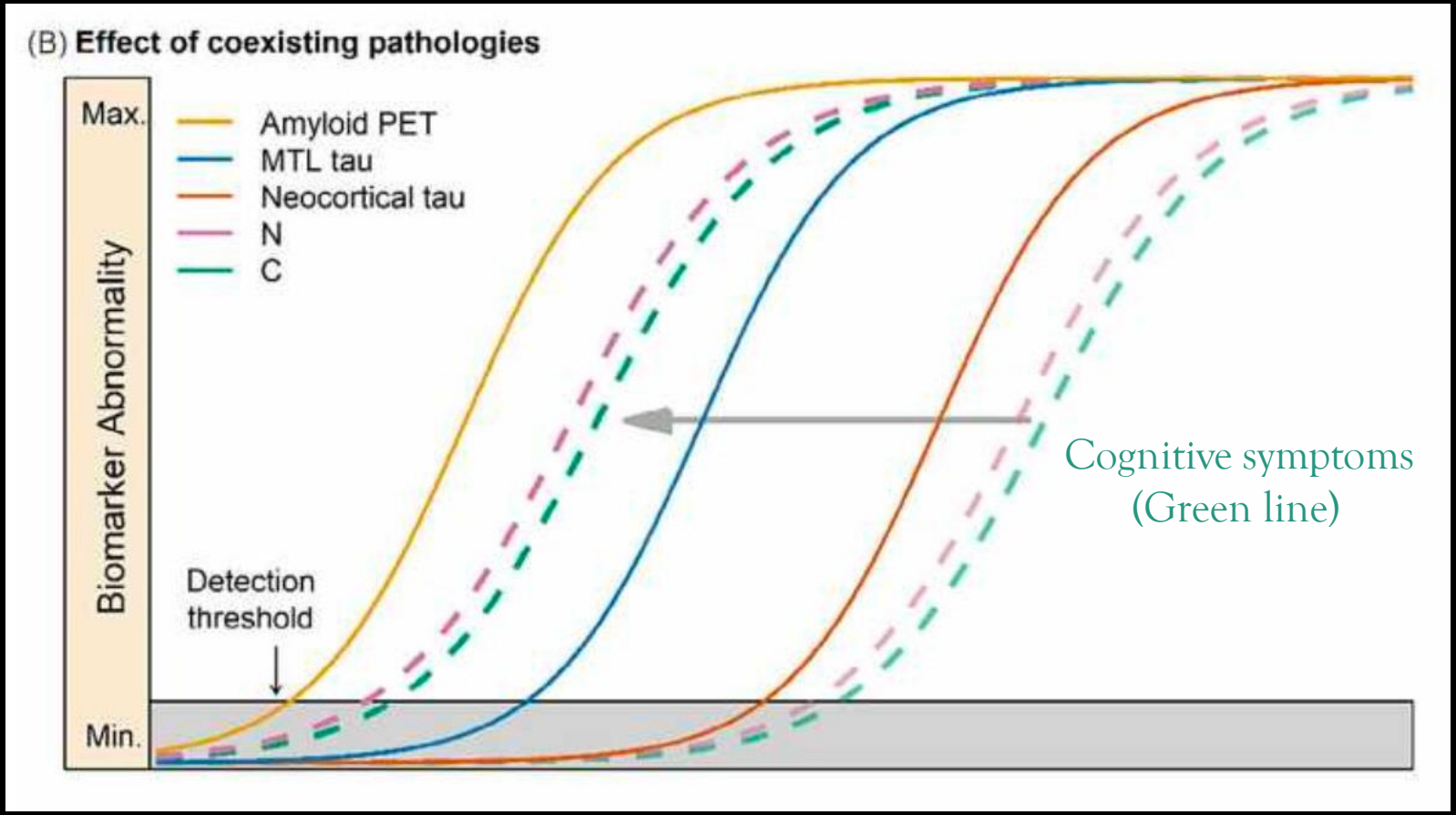
TYPICAL SEQUENCE IN PURE ALZHEIMER'S DISEASE



- Biomarkers (amyloid and tau) appear first with a long preclinical phase
- Cognitive symptoms (C) manifest later

Revised criteria for diagnosis and staging of Alzheimer's disease: Alzheimer's Association Workgroup. Alzheimers Dement. 2024 Aug;20(8):5143-5169.

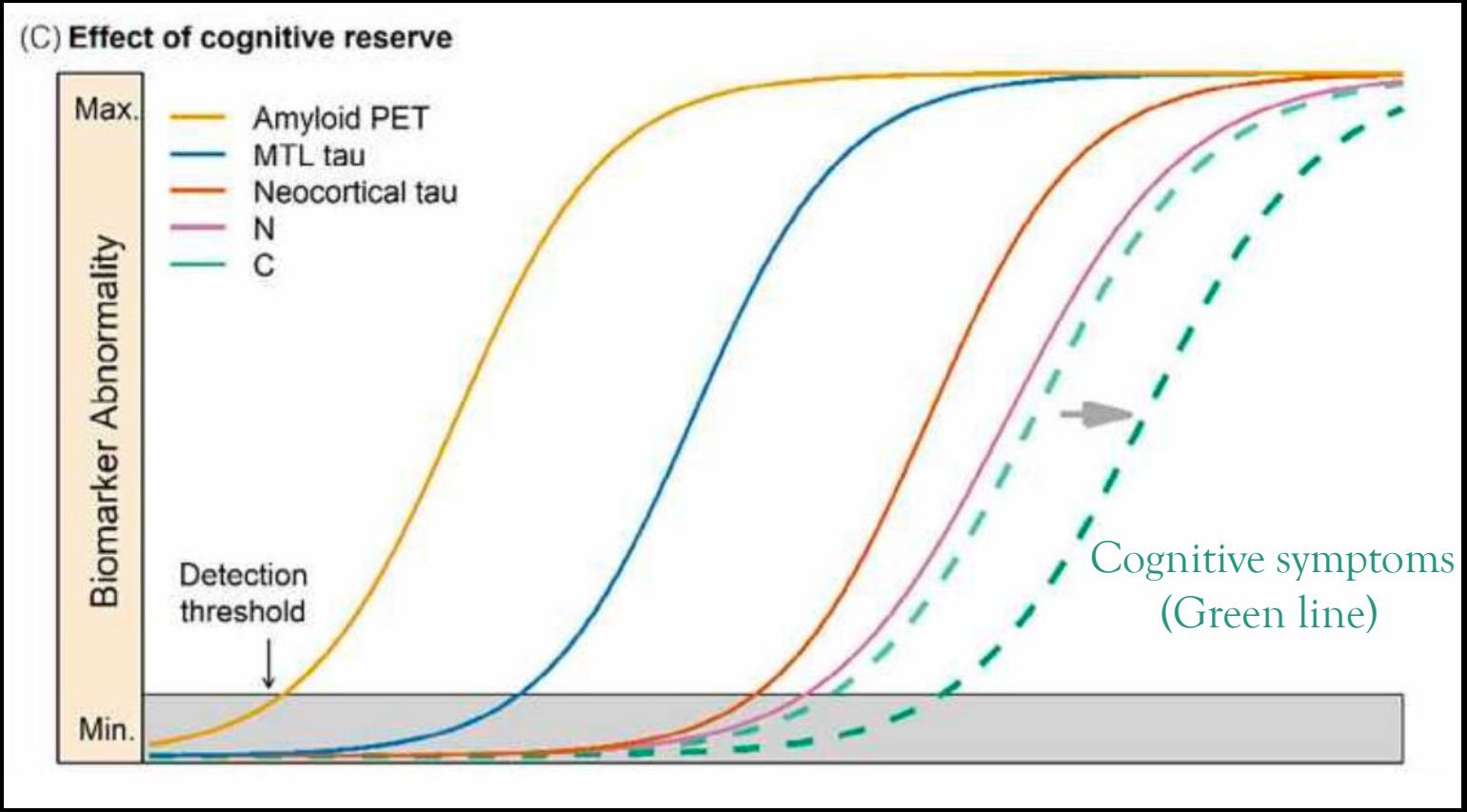
EFFECT OF CO-PATHOLOGY



- Co-pathologies e.g. stroke shifts the onset of cognitive symptoms earlier

Revised criteria for diagnosis and staging of Alzheimer's disease: Alzheimer's Association Workgroup. Alzheimers Dement. 2024 Aug;20(8):5143-5169.

EFFECT OF COGNITIVE RESERVES



- Individuals with larger cognitive reserves experience cognitive symptoms at a later point in spite of the same level of disease burden

Revised criteria for diagnosis and staging of Alzheimer's disease: Alzheimer's Association Workgroup. Alzheimers Dement. 2024 Aug;20(8):5143-5169.

TWO-PRONGED APPROACH TO DEMENTIA RISK REDUCTION

- What is the approach to preventing / delaying dementia?
  - Prevent co-pathologies (where possible)
  - Increase cognitive reserves
    - Enhancement of disease tolerance and therefore the ability of an individual to limit the impact of disease (especially if it can't be prevented)
- Every proactive step in addressing dementia risk can make a huge difference at a personal / societal level

UPDATES FROM THE 2024 LANCET COMMISSION FOR DEMENTIA - MODIFIABLE RISK FACTORS FOR DEMENTIA

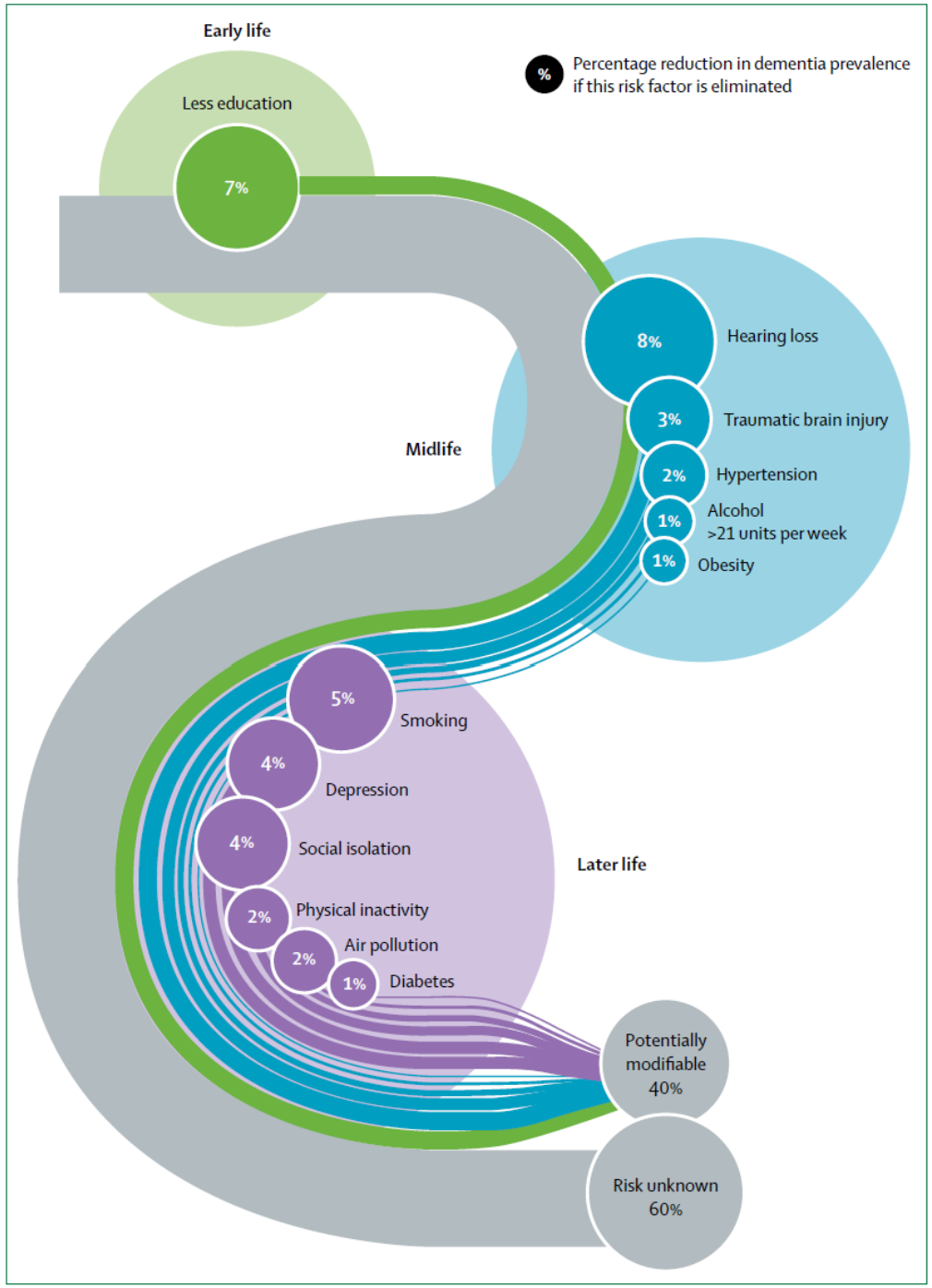
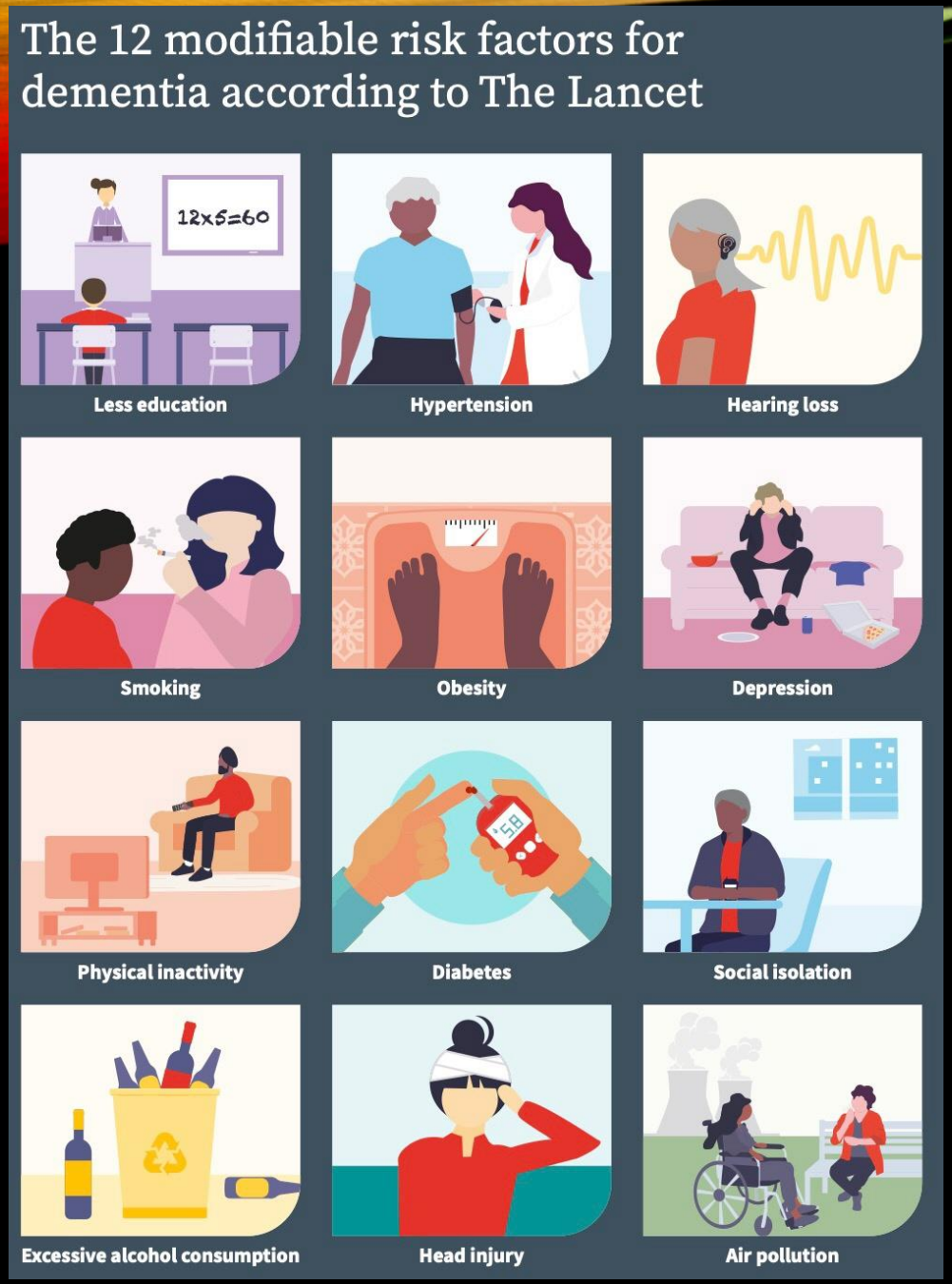


Figure 7: Population attributable fraction of potentially modifiable risk factors for dementia

2020 LANCET COMMISSION ON DEMENTIA

- 12 modifiable risk factors for dementia identified
- Risk factors organised by life course order
- Life course approach is used to understand how to reduce dementia risk because risks operate at different timepoints in the lifespan
  - E.g. obesity and hypertension in midlife is associated with dementia but not in late life
- Risk factors ranked by magnitude of population attributable fraction (PAF)
- Risk factors accounted for around 40% of worldwide dementias, which consequently could theoretically be prevented or delayed.



METHODOLOGY

- Risk factors identified

- Based on high quality, consistent, dose-dependent, validly measured evidence

- Precede dementia and are still present when measured a decade or more before onset

- Authors included risk factors with convincing evidence but also acknowledge there are likely to be other risk and protective factors

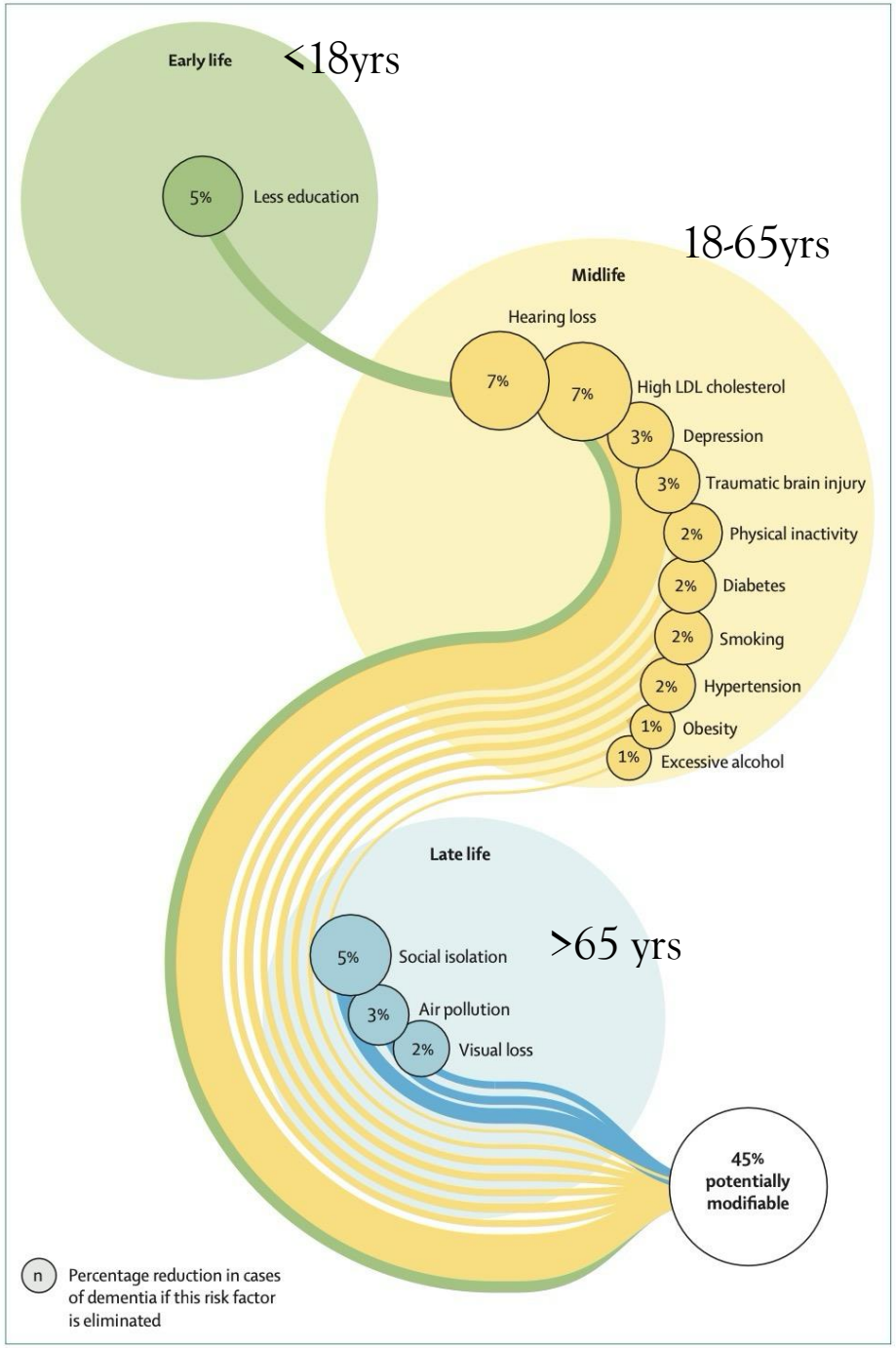


Figure 9: **Population attributable fraction of potentially modifiable risk factors for dementia**

UPDATE: 2024 LANCET COMMISSION ON DEMENTIA

- Based on new evidence, 2 additional modifiable risk factors – vision loss (2%) and high LDL (7%)
- Total 14 modifiable risk factors
- 45% of dementia could potentially be delayed or reduced
- Marks a 5% increase from their 2020 findings

Figure adapted from Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission

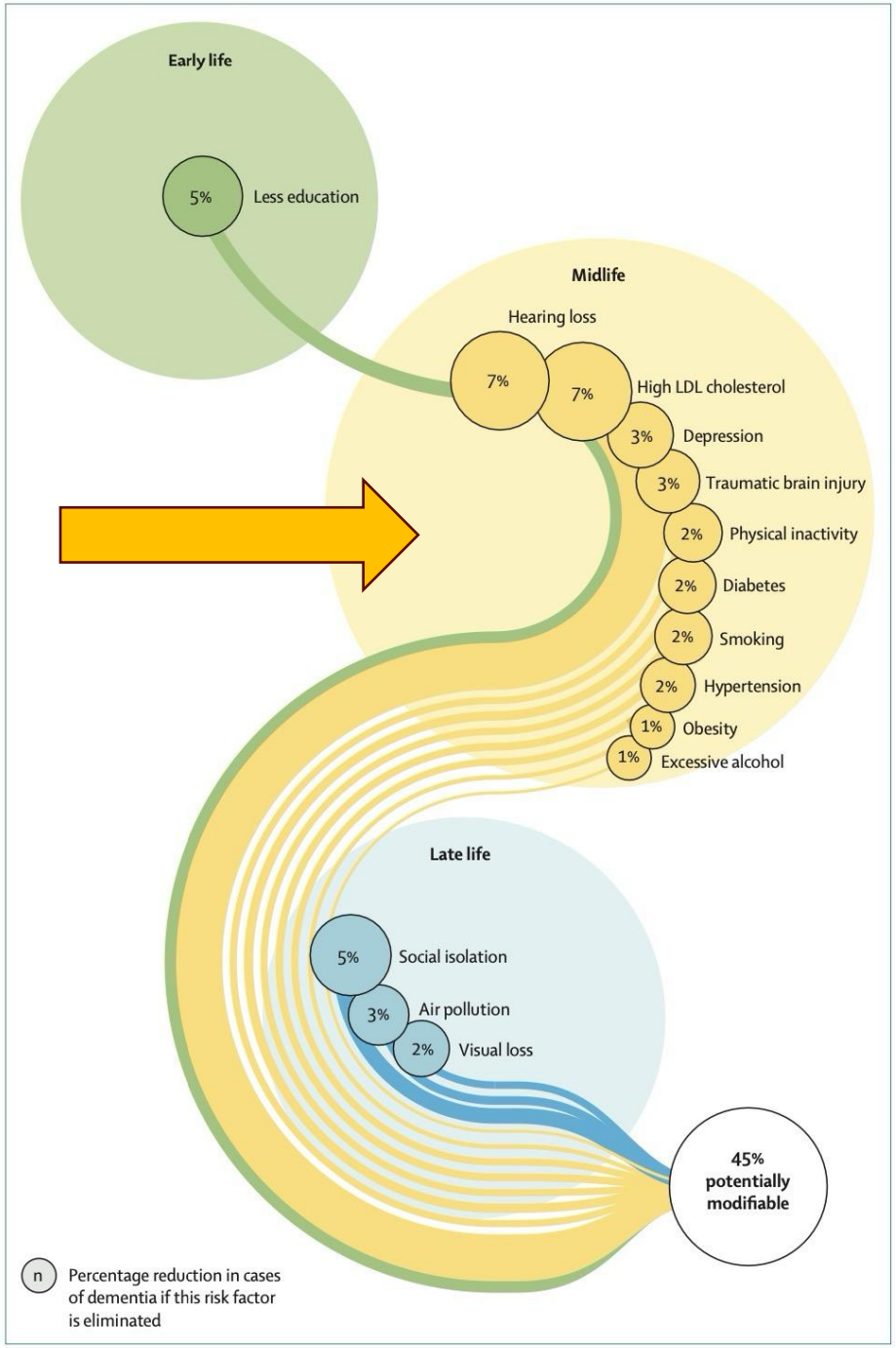


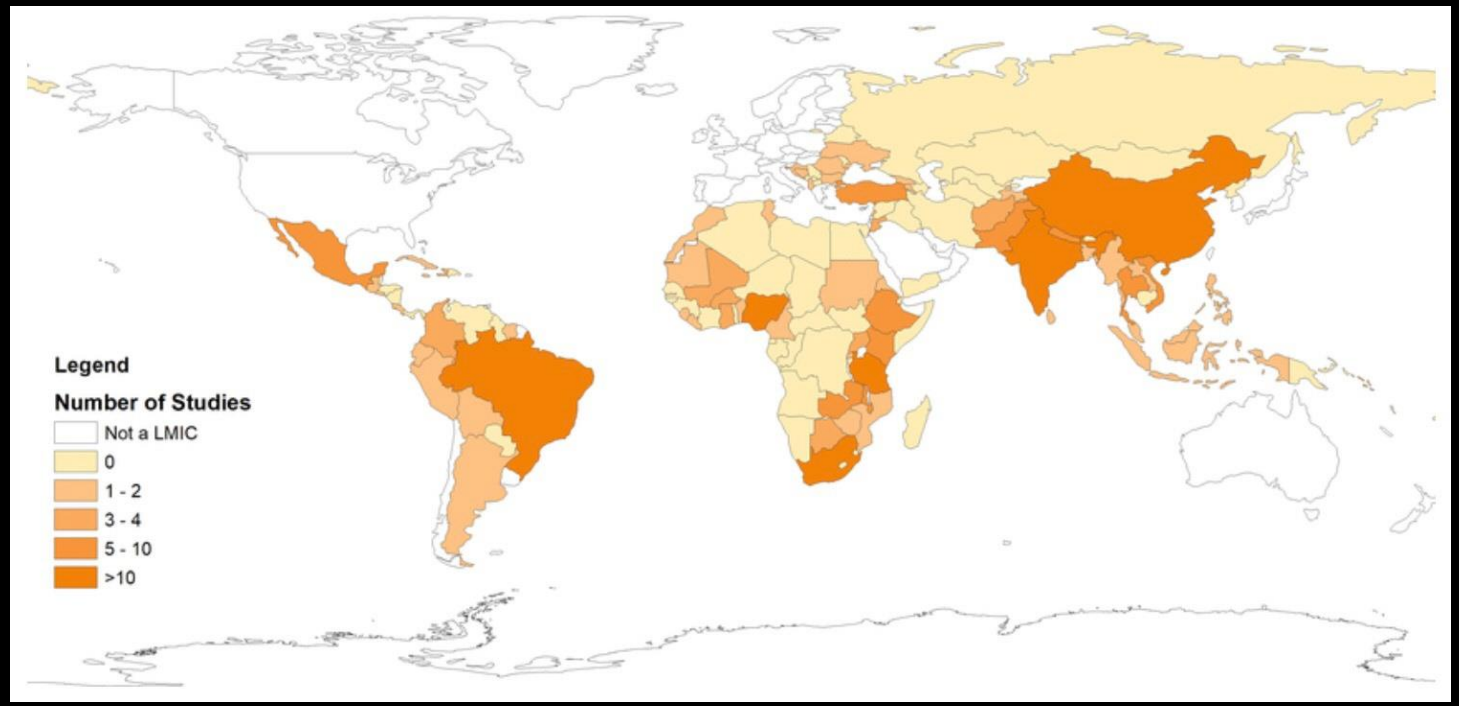
Figure 9: **Population attributable fraction of potentially modifiable risk factors for dementia**

2024 LANCET COMMISSION ON DEMENTIA

- Some risk factors regrouped in terms of life course order
- Addressing most risk factors in mid-life (18-65) had the greatest impact in delaying or preventing the onset of dementia in later life
- In early life (0-18), less education was found to have the greatest impact
- In late life (>65 years), social isolation, air pollution and vision loss were found to have a more significant impact

2024 LANCET COMMISSION ON DEMENTIA

- Demographically, those in lower- and middle-income countries or those of lower socio-economic status were the most at risk from the 14 identified risk factors, thus having the most to gain from interventions to address them.



MODIFIABLE RISK FACTORS

	RR for dementia (95% CI)	Risk factor prevalence, %	Communality, %	Unweighted PAF, %	Weighted PAF, %	Weighted PAF rounded to nearest whole number, %
Early life						
Less education	1·6 (1·3–2·0)[302]	23·2%[303]	0·608	12·2%	4·5%	5%
Midlife						
Hearing loss	1·4 (1·0–1·9)*	59·0%[304]	0·609	19·1%	7·0%	7%
High LDL cholesterol	1·3 (1·3–1·4)[36]	76·5%†	0·469	18·7%	6·9%	7%
Depression	2·2 (1·7–3·0)*	7·2%[305]	0·452	8·3%	3·0%	3%
Traumatic brain injury	1·7 (1·4–1·9)[127]	12·1%[306]	0·423	7·8%	2·9%	3%
Physical inactivity	1·2 (1·2–1·3)[173]	27·5%[307]	0·567	6·4%	2·4%	2%
Smoking	1·3 (1·2–1·4)[148]	22·3%[308]	0·650	6·3%	2·3%	2%
Diabetes	1·7 (1·6–1·8)[309]	9·3%[310]	0·493	6·4%	2·3%	2%
Hypertension	1·2 (1·1–1·4)[311]	31·1%[312]	0·595	5·9%	2·2%	2%
Obesity	1·3 (1·0–1·7)[206]	13·0%[313]	0·622	3·8%	1·4%	1%
Excessive alcohol consumption	1·2 (1·0–1·5)[213]	13·3%[213]	0·772	2·6%	1·0%	1%
Late life						
Social isolation	1·6 (1·3–1·8)[221]	24·0%[314]	0·408	12·6%	4·6%	5%
Air pollution	1·1 (1·1–1·1)[315]	75·0%[315]	0·341	7·0%	2·6%	3%
Untreated vision loss	1·5 (1·4–1·6)[262]	12·7%[260]	0·553	6·0%	2·2%	2%
Overall PAF for all risk factors	..	..	..	..	45·3%	45%

RR=relative risk. PAF=population attributable fraction. *Calculated by the authors in this Commission. †Prevalence derived from 37 000 participants aged ≥45 years from the Norwegian HUNT study.[316]

Table 1: **RR, prevalence, and PAF for all 14 potentially modifiable dementia risk factors**

- Focus on risk factors boxed in red today
  - Higher weighted PAF
  - Recently added risk factors

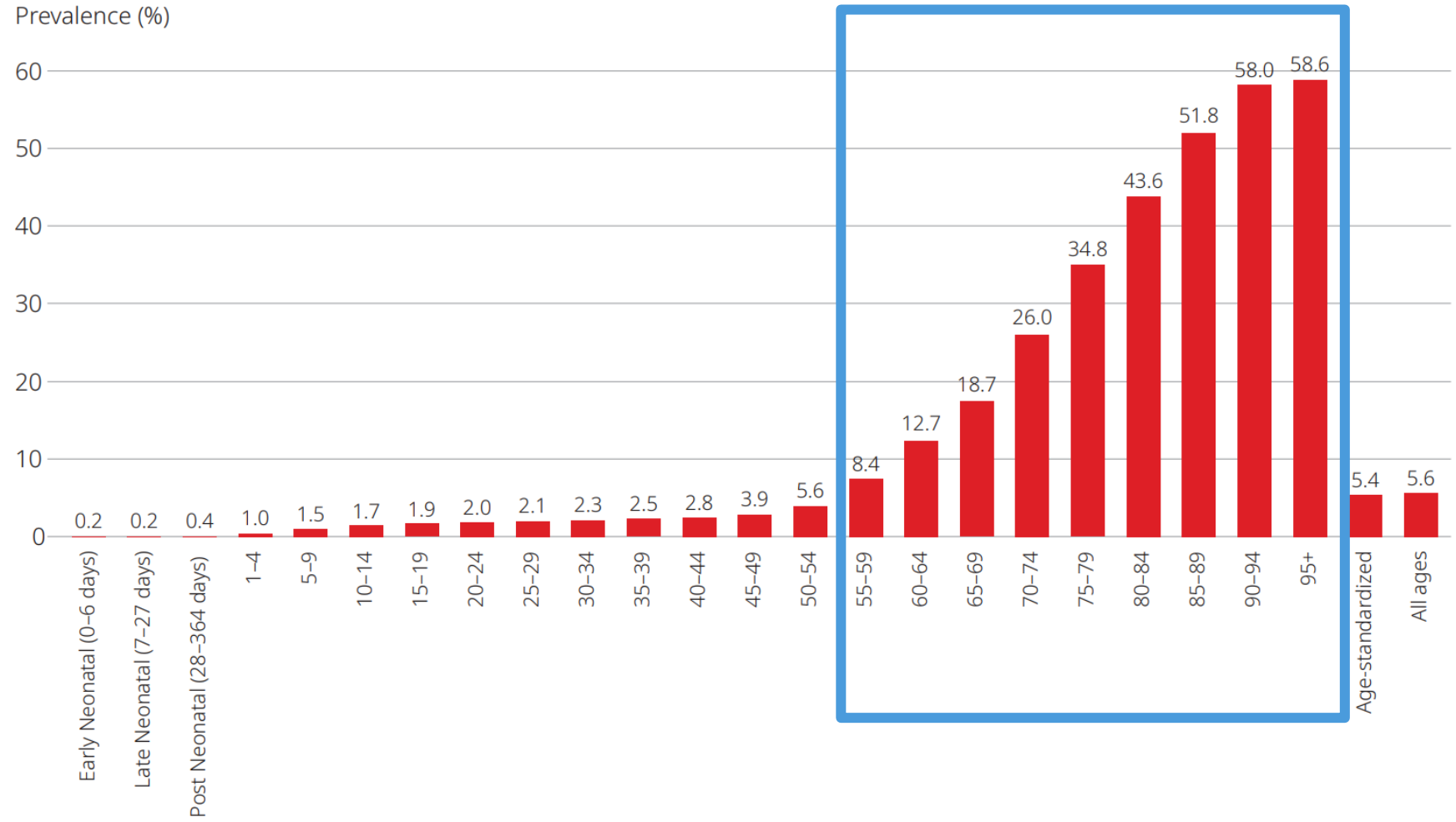
RISK FACTOR: HEARING LOSS

HEARING LOSS

- Hearing is a key component of human intrinsic capacity; it is the sense most relied upon to communicate and engage with others. Any decline in hearing capacity at any point during the life course, can adversely affect day-to-day functioning if not addressed timely
- In 2021, more than 1.5 billion people globally had hearing loss
  - 5.5% of the global population experience at least moderate levels of hearing loss
  - 62.1% were older than 50 years

WHO World report on Hearing 2021

Figure 1.6 Global prevalence of hearing loss (of moderate or higher grade) according to age



HEARING LOSS

- Urgent public health action is needed to mitigate this projected growth.
- While people with hearing loss of all ages and across all population groups need care, special attention is needed for vulnerable populations to ensure they have access to ear and hearing care and other health services.

LANCET 2024 UPDATES – HEARING LOSS

- Multiple meta-analyses reported significant associations between hearing loss and subsequent dementia (RR 1.3 to 2.4)
- Dose response between severity of hearing loss and dementia risk
  - Magnitude of risk increase varied between studies from 4% to 24% increase in dementia risk per 10dB decrease in hearing ability

HOW HEARING LOSS LEADS TO COGNITIVE DECLINE

Hypothesized pathways

- Cognitive load ('information degradation')
  - Hearing loss imposes a constant load on cortical resources that otherwise could have buffered against other pathological contributors to dementia
- Direct effects on brain structural integrity ('sensory deprivation')
  - Anatomical: accelerated brain atrophy and other pathologic brain changes
  - Functional: reduced connectivity between visual and auditory sensory networks
- Social isolation
  - Less physical, cognitive and social activity

F. Lin & M. Albert. Aging & Mental Health 2014
Brain. 2021:144(2):391-401

LANCET 2024 UPDATES – HEARING AID

- In summary:

Evidence of the benefits of hearing aids for dementia risk is increasing

Implementing the use of hearing aids, especially in at-risk individuals, would likely be cost saving

BARRIERS TO HEARING LOSS INTERVENTION IN ELDERLY

- Lack of recognition of hearing loss
  - Perception that hearing loss is normal for aging and not amenable to treatment
- Lack of knowledge on benefits of hearing loss intervention
- Non-adherence to hearing aid due to stigma, inconvenience, disappointing initial results, cost
- Use of maladaptive coping strategies (dominating conversations, avoiding social interaction)

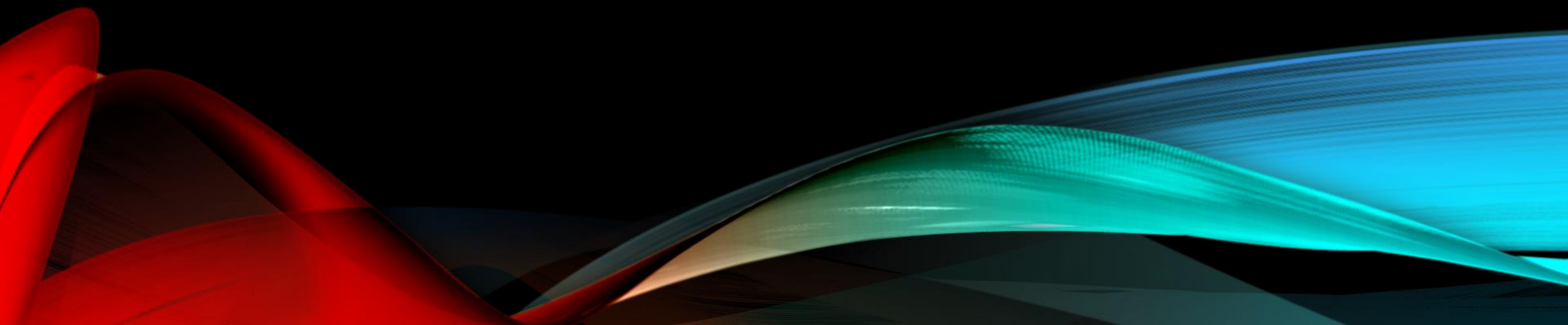
Anne D. 2012
L Jenstad. 2011

RECOMMENDATIONS FOR HEARING LOSS IN ELDERLY

- Screening
  - WHO ICOPE guidelines: Screening followed by provision of hearing aids should be offered to older people for timely identification and management of hearing loss
- Counselling
  - Appropriate counselling should be provided to patients with hearing loss, because patient perceptions and expectations are the most important factors in the acquisition and use of hearing aids.
- Consider assistive listening devices for patients with hearing loss who are unable to use hearing aids.

AAFP
WHO ICOPE

RISK FACTOR: HIGH LDL CHOLESTEROL



LANCET 2024 UPDATES – LDL

- Updates from various meta-analyses:
  - Each 1 mmol/L increase in LDL was associated with 8% increase in incidence of all-cause dementia
  - High LDL >3mmol/L was associated with increased dementia risk (HR 1.3)
  - Statin use was associated with a reduced risk of all-cause dementia and Alzheimer's dementia compared with untreated high cholesterol

LANCET 2024 UPDATES – LDL

- Proposed mechanism for the link between LDL and dementia
  - Excess brain cholesterol is not just associated with increased stroke risk, but also increased deposition of brain beta-amyloid and tau

- Statins have become a focus of research in the field of Alzheimer's disease and have potential benefit due to their anti-inflammatory and antioxidant properties as well as reducing cholesterol

LANCET 2024 UPDATES – LDL

- Summary:

High-quality, consistent, biologically plausible evidence exists that high LDL cholesterol in midlife is a risk factor for dementia

Although long term, high quality RCTs of statins to prevent dementia do not exist, these studies would be unethical and impractical to run.

RISK FACTOR: VISUAL LOSS

LANCET 2024 UPDATES – VISUAL LOSS

- Considerable new evidence emerged that vision loss is a risk factor for dementia
- Various meta-analyses have identified an increased risk of dementia with vision loss (RR ranging 1.3 to 1.5)
- Global prevalence of avoidable vision loss and blindness in adults > 50 years old is 12.6%

LANCET 2024 UPDATES – VISUAL LOSS

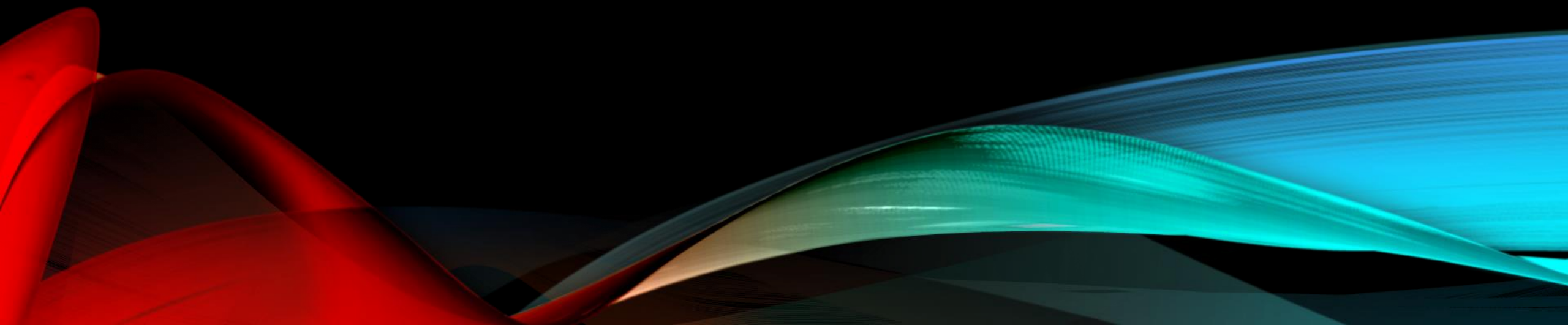
- US study followed 3000 older adults with cataracts and healthy cognition for > 20 years
  - Controlled for age, race, APOE, education, smoking, comorbidities
  - People with cataract operation had significantly reduced dementia risk compared with those who did not (HR 0.7)
- UK study reported that people with cataracts had an increased risk of dementia but there was no difference in dementia risk between those who had surgery and healthy controls

LANCET 2024 – VISUAL LOSS

In summary:

- Increasing evidence supports an association between untreated vision loss and dementia risk and potential modification by treatment
- Treatment for visual loss is effective and cost-effective for an estimated 90% of people
- Clear opportunity for dementia prevention exists with treatment of visual loss especially in the LMIC where visual loss is often not treated

RISK FACTOR: LOW EDUCATION



LANCET 2024 UPDATES – EDUCATION AND COGNITIVE ACTIVITY

- Studies found that both education attainment and occupational complexity were independently associated with increased dementia-free survival time

Cognitive stimulation		Total population (n)	Population with dementia (n)	Incidence per 10 000 person-years	Hazard ratio (95% CI)*
Education	At work				
Low	Low	55 540	768	8·1	1 (ref)
Low	High	14 005	138	5·9	0·80 (0·66–0·97)
High	Low	24 984	162	4·1	0·73 (0·61–0·89)
High	High	13 367	75	3·5	0·63 (0·49–0·82)

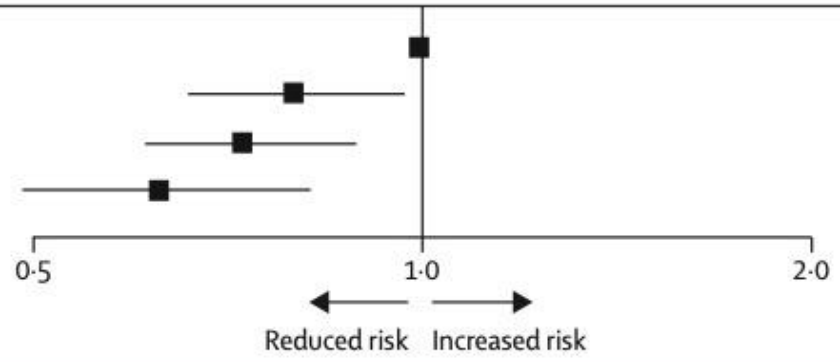
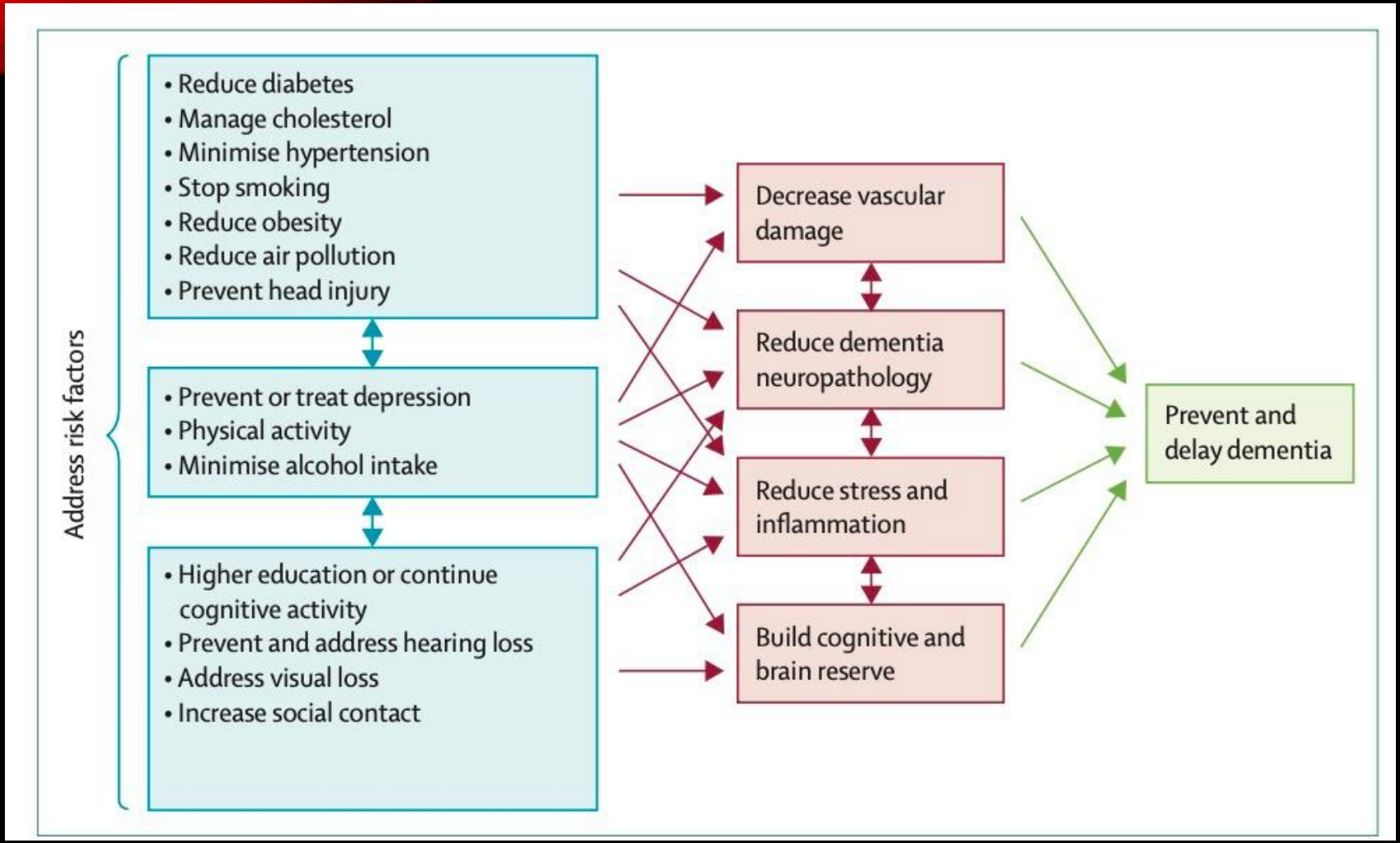


Figure 3: **Association of cognitive stimulation over the life course with incident dementia**
Reproduced from Kivimäki et al.[74] *Adjusted for age, sex, and cohort.

SUGGESTED SPECIFIC ACTIONS

Make quality education accessible	Treat depression effectively	Reduce obesity and linked condition of diabetes	Reduce alcohol use via price control and increase awareness	
Make hearing aids accessible and decrease harmful noise exposure	Ensure use of head protection in contact sports and on bicycles	Maintain SBP ≤130	Reduce exposure to air pollution via government policies	
Detect and treat high LDL	Sustain midlife and later life physical activity	Make smoking cessation accessible	Prioritize age-friendly and supportive community environments and housing	Make treatment for vision loss accessible to all

Lancet 2024



- Possible mechanisms to prevent / delay dementia in addressing the identified risk factors

Lancet 2024

LANCET 2024: KEY MESSAGE

- Dementia is not a late-life concern. Actions to decrease dementia risk should begin early and continue throughout life
- Modifying 14 risk factors might prevent or delay nearly half of dementia cases
- Risks often cluster in individuals, multicomponent interventions should be considered
- Life-course approach to risk reduction is important, to facilitate targeted interventions across different stages of life

Alzheimer's Disease International

The global voice on dementia

World Alzheimer Report 2023

Reducing dementia risk: never too early, never too late

ADI'S KEY RECOMMENDATIONS

- In the absence of a cure or a treatment that is globally accessible, risk reduction remains the most feasible and proactive way to combat dementia.
- No magical bullet for dementia but there are tangible lifestyle habits that individuals can adopt to reduce risk.
- Risk reduction is a lifelong endeavour and most effective when awareness and understanding of brain health begins at a young age, establishing good habits
- Rather than thinking of 'dementia prevention', more helpful to think about 'risk reduction' and 'brain health'
- ADI calls on governments to develop robust risk reduction strategies to include in their national dementia plans, aligned with non-communicable diseases (NCD) risk reduction targets. Recognising that these conditions have shared risk factors, there is an opportunity to leverage existing awareness campaigns, and even to create new integrated ones to benefit public health.

SG LOCAL STATISTICS AND NATIONAL INITIATIVES

RELEVANT TO DEMENTIA PREVENTION

EDUCATION

- Mean number of years of schooling increased from 4.7 in 1980 to 11.7 in 2023
- Education Profile of Singapore Residents Aged 25 Years & Over By Highest Qualification Attained (%)

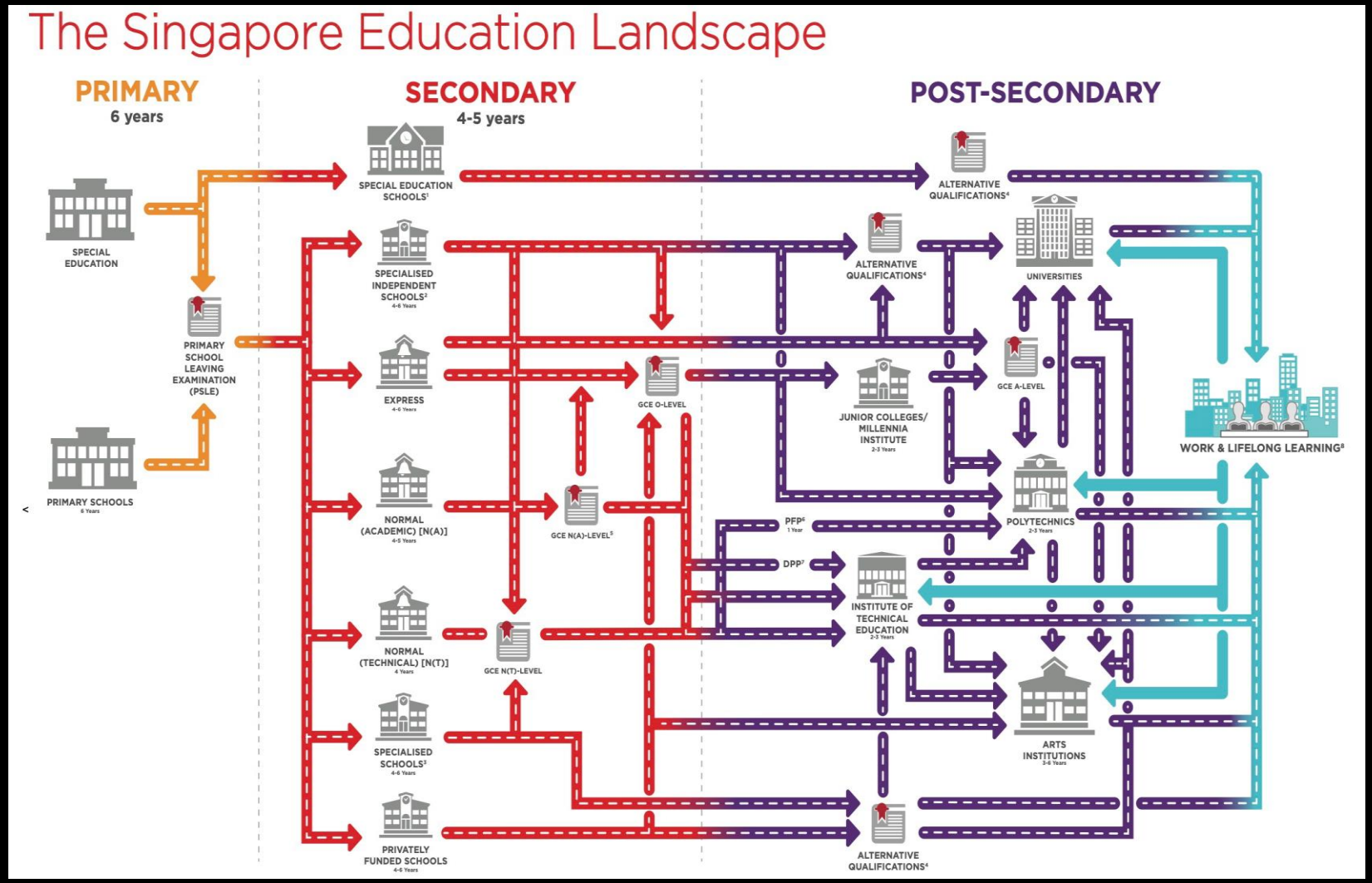
	2023	2000
No qualification/lower primary (%)	10.5	21.2
Primary (%)	4.8	13
Lower secondary (%)	6.1	11.1
Secondary (%)	15.5	24
Post-secondary, non-tertiary (%)	10	8.9
Tertiary (%)	53.2	21.8

11.7 years

Singstat.gov

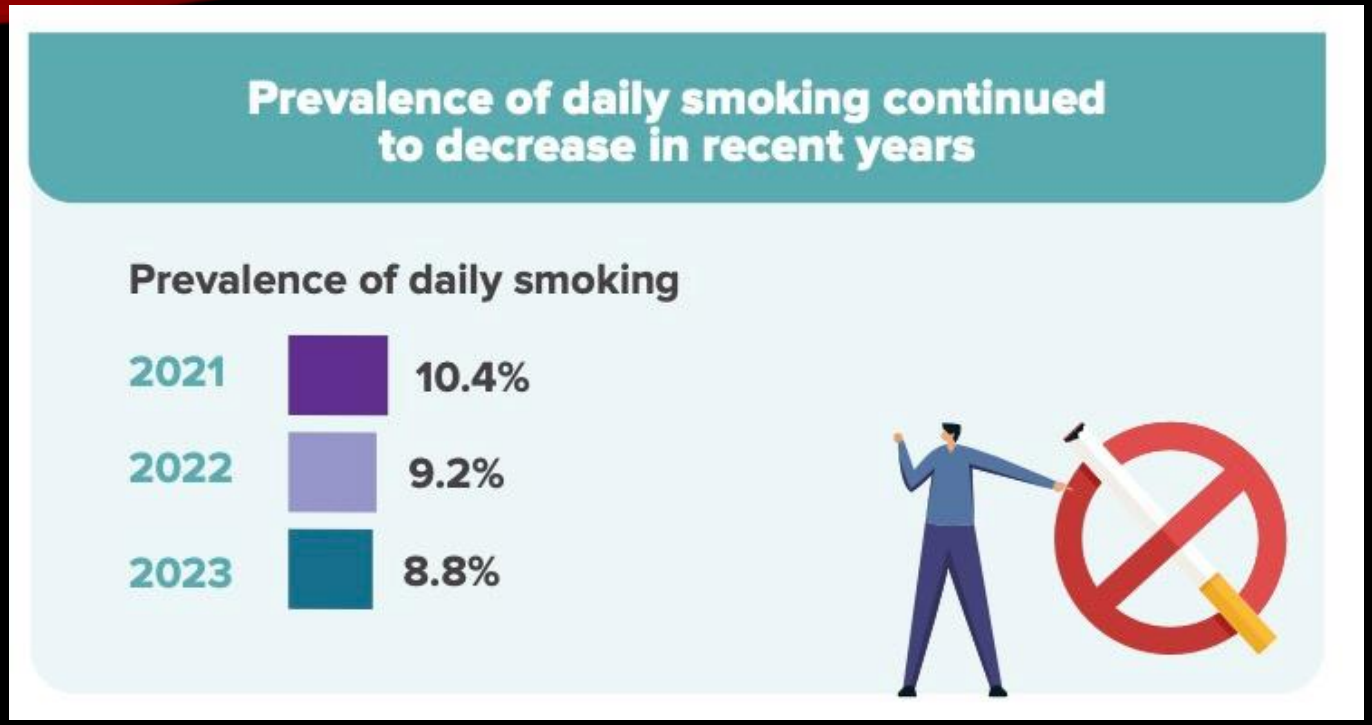
EDUCATION

- Compulsory Education Act (2000)
  - Mandatory primary school education for SG citizens
- Variety of post-secondary education institutions (PSEI)
- SkillsFuture SG (2015)



MOE Education statistics digest 2022

CIGARETTE SMOKING



- Prevalence of daily smoking has decreased from 9.2% in 2022 to 8.8% in 2023, continuing a declining trend of smoking rates over the past decade

SG Population Health Survey 2023

- Of note:
  About half (46.5%) of daily smokers in 2023 had intention to quit smoking
  1 in 6 daily smokers planned to quit smoking within the next 12 months

ALCOHOL CONSUMPTION

- 2.1% of SG residents aged 18 to 74 years consumed alcohol regularly
- Prevalence remained fairly stable compared to the past few years

Table 1.2: Alcohol consumption (%) among Singapore residents aged 18 to 74 years by sex, 2023

Alcohol Consumption	Total	Males	Females
Non-drinker	53.7	45.8	61.2
Occasional drinker	35.3	39.6	31.2
Frequent drinker	9.0	11.5	6.6
Regular drinker	2.1	3.2	1.0

Note: Data might not sum to 100% due to rounding.

SG Population Health Survey 2023

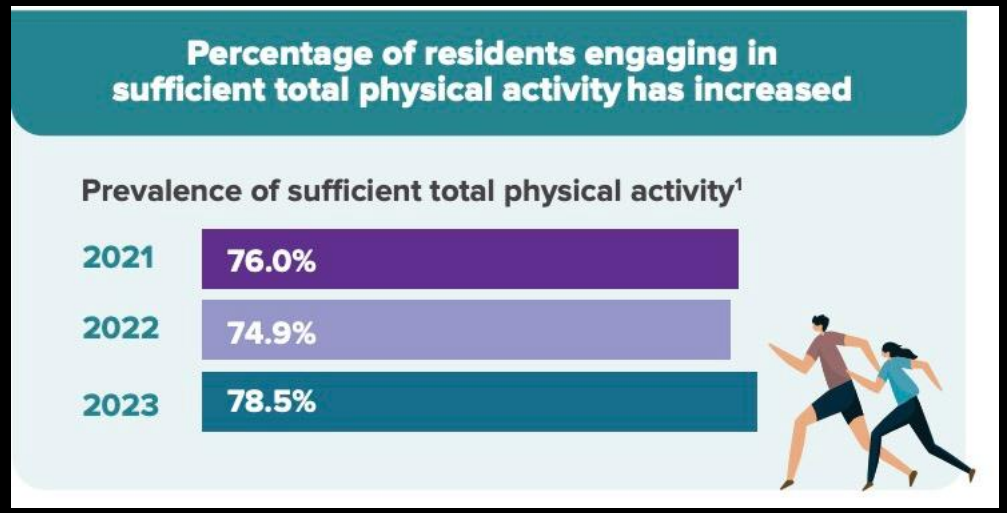
PHYSICAL ACTIVITY

<u>WHO definition for sufficient physical activity:</u>

- Total physical activity:
  - At least 150 minutes of moderate-intensity physical activity or at least 75 minutes of vigorous-intensity physical activity per week
- Muscle strengthening activities: exercising major muscle groups at least 2 days or more a week

PHYSICAL ACTIVITY

- Based on all domains of physical activity recognized by the WHO (work-related, transportation-related and leisure-time):
  78.5% had sufficient total physical activity in 2023



SG Population Health Survey 2023

PHYSICAL ACTIVITY

- 1 in 3 (33.7%) of SG residents aged 18 to 74 years reported having sufficient muscle-strengthening activities

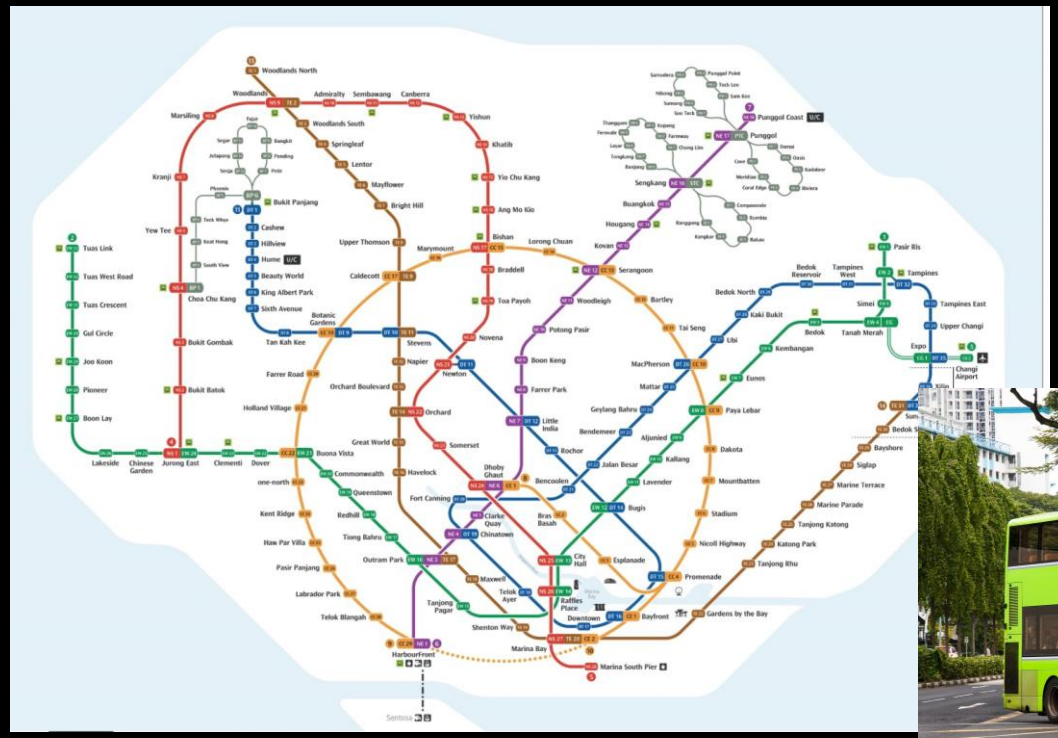
Table 3.3: Age-specific prevalence (%) of sufficient muscle-strengthening activities among Singapore residents aged 18 to 74 years by sex, 2023

Age (years)	Total	Males	Females
18-29	42.3	56.0	28.2
30-39	34.0	40.8	27.8
40-49	31.7	36.9	26.9
50-59	31.3	36.4	26.4
60-74	29.9	32.7	27.2
18-74	33.7	40.4	27.3

SG Population Health Survey 2023

PHYSICAL ACTIVITY

- Largest contributor to total physical activity per week was commuting (45%)
  - Efficient public transport network and high costs of car ownership
- Recreational facilities – sports facilities, gardens, parks, natural reserves



DM/HTN/HLD

- Self-reported chronic disease
  - DM: 7.3%
  - HTN: 15%
  - HLD: 15.3%
- Increase trend from 2007 to 2023

Table 4.2: Prevalence (%) of self-reported diabetes mellitus among Singapore residents aged 18 to 74 years by age, sex, education, and ethnicity, 2007 to 2023

	NHSS	NHS	NHSS	NPHS	NPHS	NPHS	NPHS	NPHS	NPHS
	2007	2010	2013	2017	2019	2020	2021	2022	2023
Total	4.9	5.0	5.4	6.7 (5.7, 7.7)	6.9 (6.1, 7.7)	7.0 (6.3, 7.8)	6.9 (6.2, 7.6)	6.7 (6.0, 7.3)	7.3[b] (6.6, 8.0)

Table 5.2: Prevalence (%) of self-reported hypertension among Singapore residents aged 18 to 74 years by age, sex, education, and ethnicity, 2007 to 2023

	NHSS	NHS	NHSS	NPHS	NPHS	NPHS	NPHS	NPHS	NPHS
	2007	2010	2013	2017	2019	2020	2021	2022	2023
Total	12.7	14.0	12.9	12.7 (11.4, 14.1)	15.6 (14.3, 16.9)[a]	15.1 (14.1, 16.2)	15.7 (14.6, 16.7)	16.0 (15.0, 16.9)	15.0[b] (14.1, 16.0)

Table 6.2: Prevalence (%) of self-reported hyperlipidaemia among Singapore residents aged 18 to 74 years by age, sex, education, and ethnicity, 2007 to 2023

	NHSS	NHS	NHSS	NPHS	NPHS	NPHS	NPHS	NPHS	NPHS
	2007	2010	2013	2017	2019	2020	2021	2022	2023
Total	8.2	12.3	10.4	11.0 (9.7, 12.3)	13.6 (12.5, 14.6)[a]	13.1 (12.1, 14.1)	13.9 (12.9, 14.9)	14.1 (13.2, 15.0)	15.3[b] (14.3, 16.2)

SG Population Health Survey 2023

CHRONIC DISEASE SCREENING

- Among SG residents aged 40-74 years, 62.6% were screened for all 3 health conditions within the recommended screening guidelines in 2023

Of those Singapore residents aged 40 to 74 years without having any known diabetes, hypertension or hyperlipidaemia and had not gone for screening for the respective conditions, the following were cited as reasons for not doing screening:

Rank	Diabetes screening	High blood pressure screening	High blood cholesterol screening
1	Not necessary as I am healthy (66.9%)	Not necessary as I am healthy (74.7%)	Not necessary as I am healthy (68.1%)
2	No time due to work/ family commitment (8.3%)	No time due to work/ family commitment (8.4%)	No time due to work/ family commitment (9.8%)
3	Not suggested by doctors (7.6%)	s	Not suggested by doctors (6.5%)

Note: s: Data have been suppressed due to small counts or high sampling variability.

SG Population Health Survey 2021, 2023

PREVENTIVE HEALTH- SG

- Healthier SG initiative
  - Rolled out in July 2023
  - National initiative by MOH focusing on preventive health.

  - Personalised Health Plan with family doctor to include relevant nationally-recommended health screenings and vaccinations to detect health issues early and manage them well.
  - Lifestyle adjustments and community programmes recommended to sustain healthier habits

PREVENTIVE HEALTH- SG

- In partnership with three regional health clusters, AIC, HPB, PA, Sport SG will step up to support health goals
  - Health Promotion Board
    - Scale up physical activity programmes by >50% to serve around 47 000 participants every week
  - People's Association
    - Further increase outreach to residents for its programmes such as brisk walking, Taichi, qigong and gardening + health/lifestyle courses at community centres
  - Sport SG
    - Encourage residents to participate in variety of sports, exercise and interest groups offered at ActiveSG Sport Centres

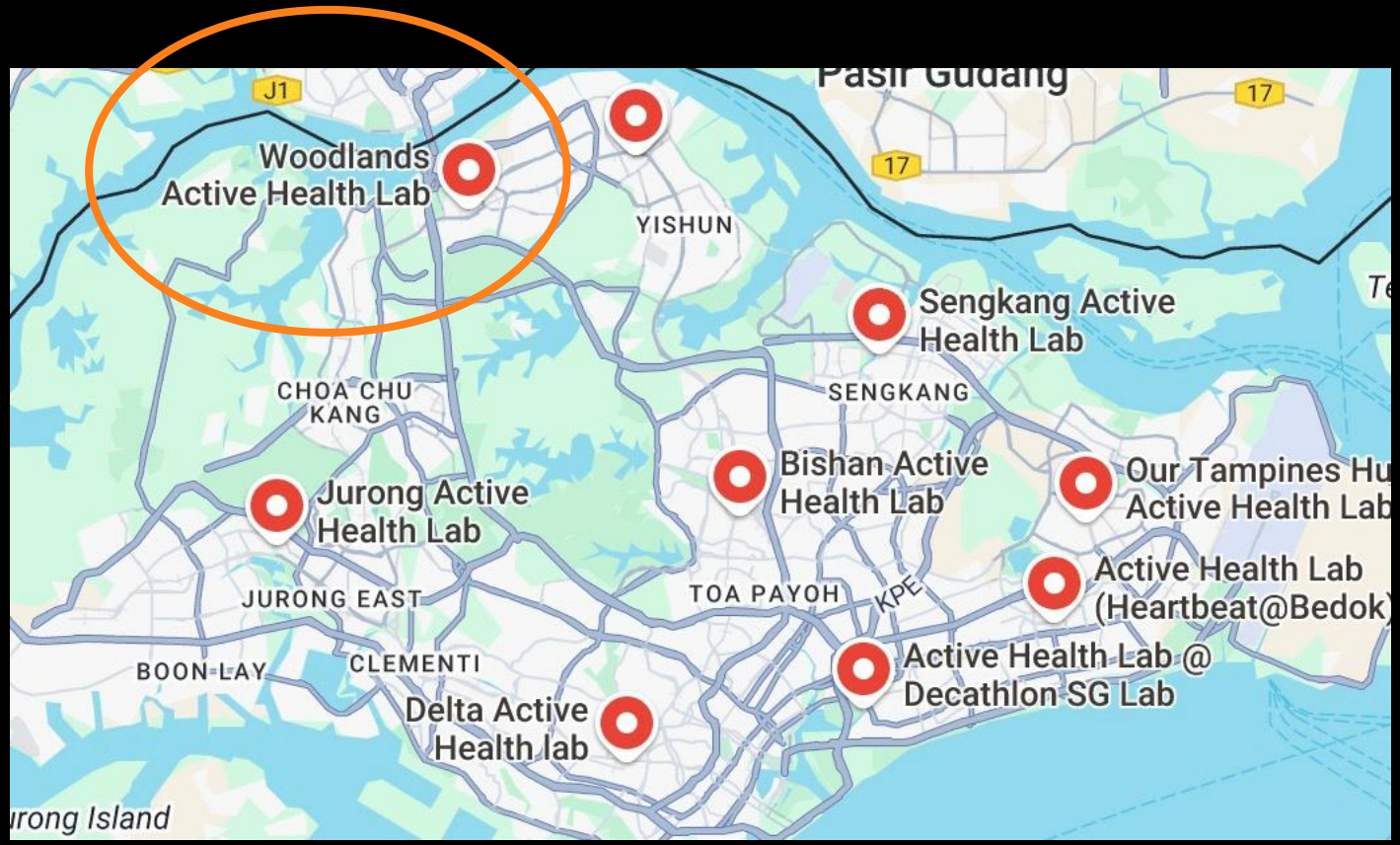
- Sport SG – Exercise programs for people with medical conditions
  - 4 Medical conditions
    - Obesity: BMI 27.5 to 37.4
    - DM: Well controlled and no hypoglycemic episodes in past 3/12
    - HTN: Well controlled, BP < 160/100 at rest
    - Osteoarthritis: mild/mod knee/hip OA with no acute swelling or morning stiffness lasting >30min and/or able to climb 1 flight of stairs and sit-to-stand 5x without pain and support
  - Sessions help individuals learn about their conditions and safety considerations to start exercising in a safe manner
  - 6 weekly sessions lasting 60 min per session, total $48 before subsidies

Exercise programs for people with chronic diseases

- Sport SG - Programmes for seniors: Combat Age-related Muscle Loss (CALM)
  - Seniors >60years old to practice resistance exercises
  - Criteria: without daily activity limitations
  - 8 weekly sessions, 60min per session, $60 before subsidies

CALM

WOODLANDS SPORTS CENTRE



Targeted programs

CALM

VISUAL/HEARING LOSS SUPPORT FOR THE ELDERLY

- Project silver screen
  - Nation-wide programme for Singaporeans aged 60 and above
  - Affordable functional screening for vision, oral health and hearing at $5 or less
  - Fitted with spectacle, hearing aids and dentures at affordable cost

Vision	1. **Vision acuity test using Snellen and Pinhole tests**
Oral	1. **Simple oral check on Lips, Tongue, Gums and Tissues, Saliva, Natural Teeth, Dentures, Oral Cleanliness and Dental Pain.**
Hearing	1. **Hearing Handicap Inventory for Elderly Screening Version (HHIE-S) is a 10-item questionnaire developed to score the degree of functional (social and emotional) handicap associated with hearing impairment.** 2. **Checking if the senior has Tinnitus by completing a 2-item survey.** 3. **Checking of the ear canals using otoscope.** 4. **Hearing sound test using the audiometer.**

VISUAL/HEARING LOSS SUPPORT FOR THE ELDERLY

- Senior mobility fund
  - Up to 90% subsidies for those meeting eligibility criteria
  - Assistive devices including hearing aids and spectacles
    - [NEW] Replacement of hearing aid possible after 48 months black-out period
  - Eligibility:
    - Aged > 60 year old
    - Household monthly income per person $2.6k and below or Annual Value of residence $21 000 and below for households with no income

AIR POLLUTION + SOCIAL ISOLATION

Singapore - Garden city

- "Garden city program" vision 1967
- Parks and Trees Act 1975: mandated for greenery in construction
- Park development program (1970s): park creation for recreational activities and establish green spaces that act as 'green lungs'
- NParks (1996): Build park connectors and set up nature reserves to preserve natural heritage

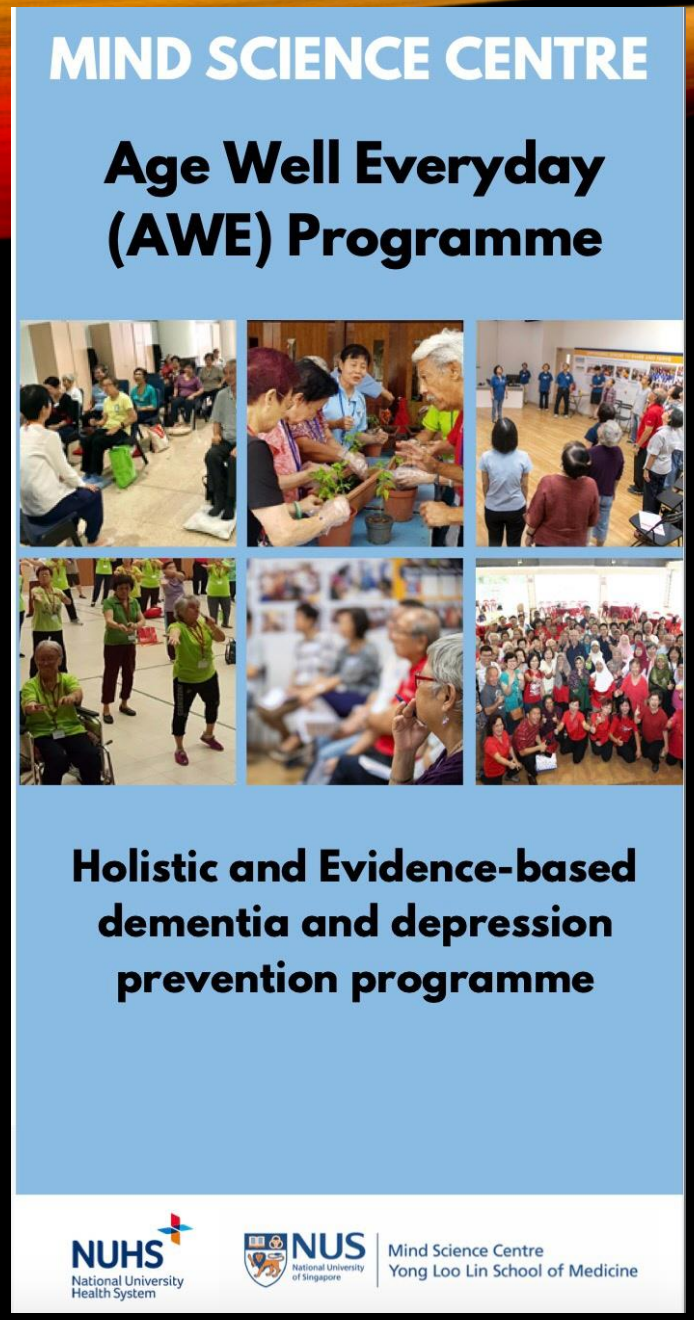
- High rise public/private housing
- Residential areas designed with community spaces for social interaction
  - Community gardens, playgrounds, void decks etc.

NATIONAL DEMENTIA STRATEGY

- National dementia strategy (NDS)
  - Developed in 2009 by MOH and reviewed in 2017
  - Guides MOH, PHIs and community service providers in the development of services for dementia
  - Key elements include increasing dementia awareness and promoting early detection

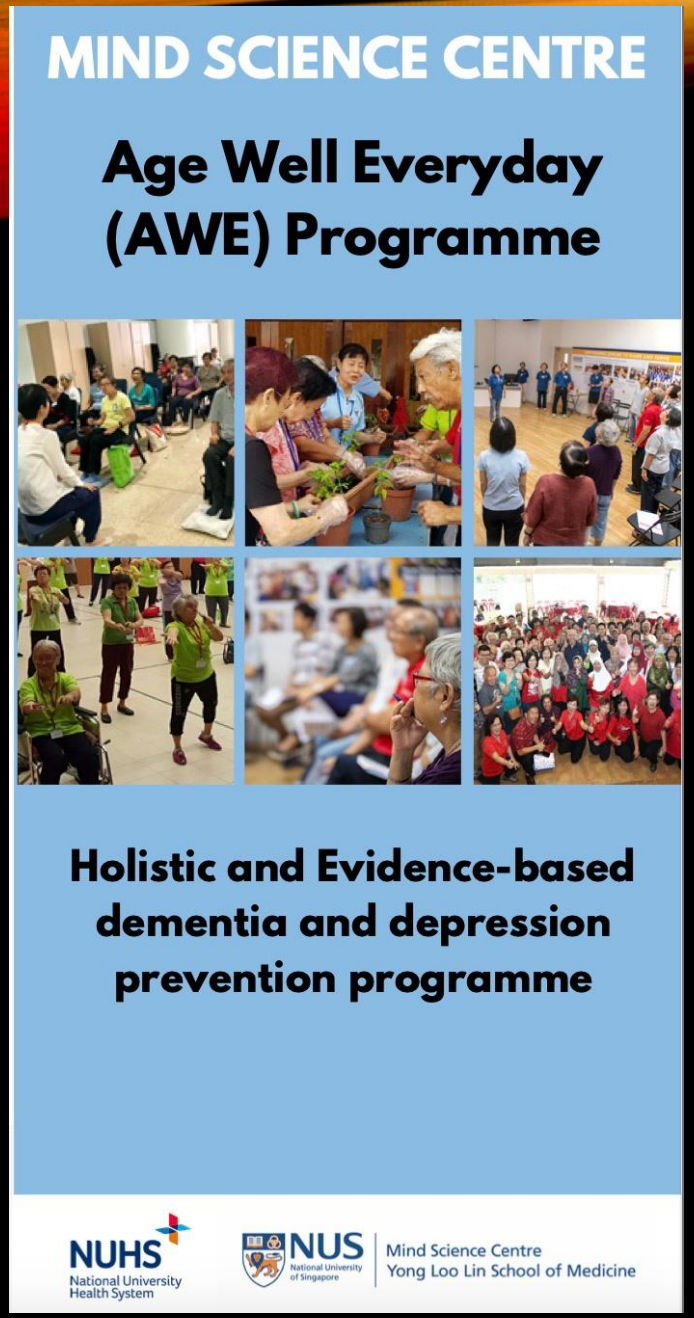
DEMENTIA-FRIENDLY SINGAPORE (DFSG) INITIATIVE

- AIC and community partners are also involved in the National Dementia Strategy through the Dementia Friendly Singapore (DFSG) initiative – 2016
  - Aims
    - Promoting preventive activities to reduce risk of dementia
    - Providing care and support to people with dementia and caregivers
    - Building a dementia care network



DEMENTIA PREVENTION PROGRAM

- Age Well Everyday (AWE): for adults >40 years old
- Community programme – encompassing health education, exercise, mindfulness practice, art & music reminiscence and horticultural therapy
- Delivered by volunteers and designed to delay cognitive deterioration, reduce anxiety/depression and increase socialization, thereby delaying onset of dementia and improving quality of life of seniors
- Runs weekly at various locations across Singapore
  - E.g. AACs, RNs, CCs



AWE LOCATIONS

Site	Time	Contact Person
REACH Teck Whye (153 Jalan Teck Whye Level 3)	Tuesday 9.30am - 10.30am	Ivan (96892482)
REACH Bukit Batok (Blk 417 Foyer - 417 Bukit Batok West Ave 4)	Tuesday 10am - 11am	60271217 / 92977508
Jurong Central Zone A RN (Blk 499 Foyer - 499 Jurong West Street 41)	Tuesday 2pm - 3pm	Jianping (81333514)
Thye Hua Kwan AAC @ Beo Crescent (44 Beo Crescent)	Wednesday 2pm - 3pm	Aathira (84848727)
The Serangoon Community Club	Thursday 10.30am - 11.30am	Syafinaz (62858833)
Covenant Evangelical Free Church Woodlands (90 Woodlands Drive 16)	Thursday 2pm - 3pm	Catherine (91045541)
REACH Jalan Membina (Blk 25A Foyer - 25 Jalan Membina)	Friday 10am - 11am	94310161
Clementi Meadows (The Court @ 306 Clementi Avenue 4)	Friday 1.30pm - 2.30pm	Shaun (82287110)

LOCAL DEMENTIA STATISTICS

IMH WISE KEY FINDINGS

Updates from 2nd Well-Being of the Singapore Elderly (WiSE) study by IMH:

- Decrease in prevalence of dementia among older adults aged 60 years and above
  - 1 in 10 persons (10%) in 2013 > 1 in 11 persons (8.8%) in 2023
- Treatment gap of dementia has improved by 19% points since the last WiSE study
- Rate of undiagnosed dementia decreased from 70% in 2013 to 51% in 2023
- While the prevalence of dementia has dropped, the number of older adults with dementia rose from 51,934 in 2013 to 73,918 in 2023.
  - This is largely due to the increase in the local older adult population during this period.

IMH WISE STUDY

Comments

- Slew of national initiatives to promote active ageing, early detection/treatment of chronic disease that could contribute to cognitive impairment and improve awareness of cognitive health may have helped to bend the curve in dementia prevalence
- Memory clinics that have been set up across Singapore for those experiencing memory complaints to receive assessments, specialized care and support have improved the treatment gap
- Training of primary care providers has better enabled them to identify early signs of cognitive decline and symptoms of dementia, improving rates of undiagnosed dementia
- Important that we continue to strengthen our efforts to reduce the impact of dementia

WHAT IS NEXT?

Role of memory clinic in dementia risk reduction

ROLE OF MEMORY CLINIC

- With increasing awareness of dementia, more people are being seen in memory clinic at earlier stages i.e. SCD, MCI (pre-dementia)
- Wide variety of programmes for the healthy older adult and those with dementia
- Limited structured support for people diagnosed with Mild Cognitive Impairment
  - Upon receiving diagnosis of MCI, patients will be given brief counseling on lifestyle advice, and will need to seek out ways to implement changes on their own
- Sheer scope of options to pursue when seeking to lower one's dementia risk can feel intimidating

ROLE OF MEMORY CLINIC

- More can be done for those with Mild Cognitive Impairment
  - MCI: (+) Cognitive symptoms, (+) Objective impairment, Intact function
  - Group of patients require support for the cognitive deficits that interfere with daily life and the associated depressive/anxiety symptoms that come along
  - Prevalence estimated 12.5% in a local study of older adults
  - Represents an at-risk group
  - An opportunity for early intervention to delay cognitive decline
  - Studies have shown multi-domain interventions that address multiple risk factors at once to be more effective than single-domain interventions

HMDP

MAYO CLINIC

HABIT®

Healthy Action to Benefit Independence & Thinking

A 10-day Brain and Body Wellness Program for people living with mild cognitive impairment and a support partner.

HABIT PROGRAM

- Pillars of brain health
  - Physical exercise
  - Cognitive exercise
  - Social activity
  - Healthy diet
  - Emotional wellness

- 10-day multicomponent program
- Participants with MCI + support partner
- Engage daily in 5 components
  - Individual memory support training
  - Computer-based cognitive training
  - Yoga
  - Support group
  - Wellness education
- 5 hours per day

PATIENT OUTCOMES

	QOL	Self-Efficacy	Mood	Memory iADLs	Daily Functions	Cognitive Functioning	Physical Functioning
Time point (s)	6-12m	8 w-12m	6-12m	8 w-12m	18m	12m	12m
Yoga							
Memory support training							
Computerised cognitive training							
Support group							
Wellness							

Solid fill = primary effect on outcome
Graded fill = contributing effect when combined with other graded interventions

PARTNER OUTCOMES

	QOL	Self-Efficacy	Mood	Anxiety	Burden	Physical Functioning
Time point (s)	6-12m	12m	8 w-12m	6-12m	8 w-12m	12m
Yoga						
Memory support training						
Computerised cognitive training						
Support group						
Wellness						

Solid fill = primary effect on outcome
Graded fill = contributing effect when combined with other graded interventions

PROGRAM DEVELOPMENT FOR MCI PATIENTS AT WH

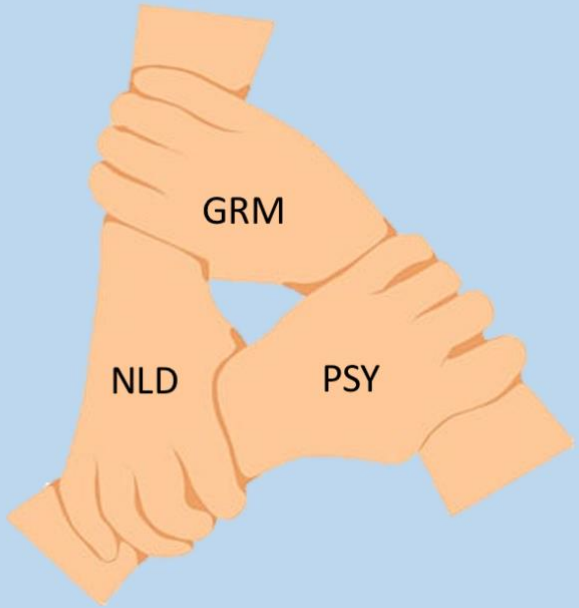
- Multicomponent group program currently being developed at WH
- Empower people with MCI and their caregivers with a structured road map to combat cognitive decline.
- 5 therapeutic components: cognitive health education, memory strategies/cognitive training, physical activity, mindfulness practice, peer support
- 6 weekly group sessions + 2 booster sessions
- Participants with MCI are to continue incorporating good lifestyle habits into their daily routine with the support from their caregiver after the program for sustained benefits

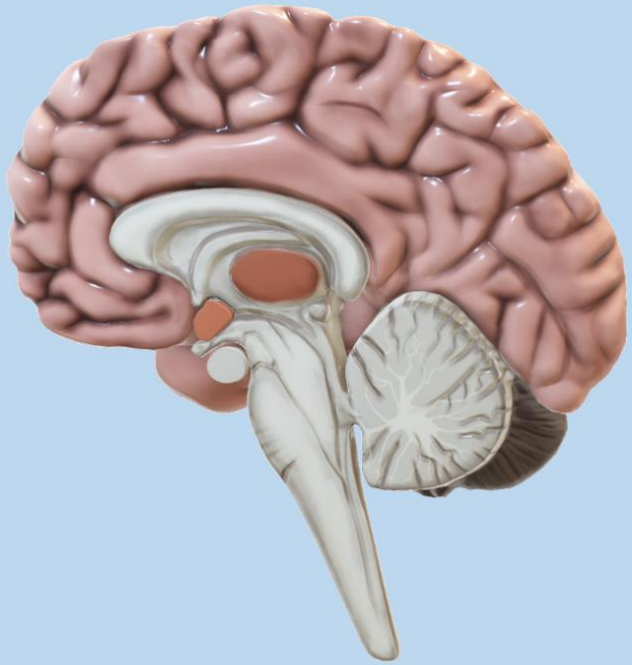
INTERIM

- In the interim, patients diagnosed with MCI can be referred to Occupational therapist for individual MCI interventions while group program is being developed
  - Calendar training
  - Cognitive stimulation
  - Optimizing safety and mood
  - Education and counseling on lifestyle strategies and future planning

- Do refer to WH Memory clinic if you think your patient with cognitive complaints may have MCI and would benefit from a structured program to help them develop good lifestyle habits to delay cognitive decline

WoodlandsHealth Combined Memory Clinic





WH COMBINED MEMORY CLINIC

- Patients referred to WH memory clinic are triaged based on a decision tree and assigned to see the most appropriate specialist based on certain characteristics such as age, presence of prominent behavioral symptoms and other geriatrics syndromes
- 3 specialties work together to develop resources to support people with cognitive impairment rather than working in individual silos
- Patients with challenging management or diagnostic dilemmas benefit from expertise from all 3 specialties during multidisciplinary rounds

IN SUMMARY

Dementia risk reduction strategy can be broken down at different levels

- Individual
- Institutional
- National
- International

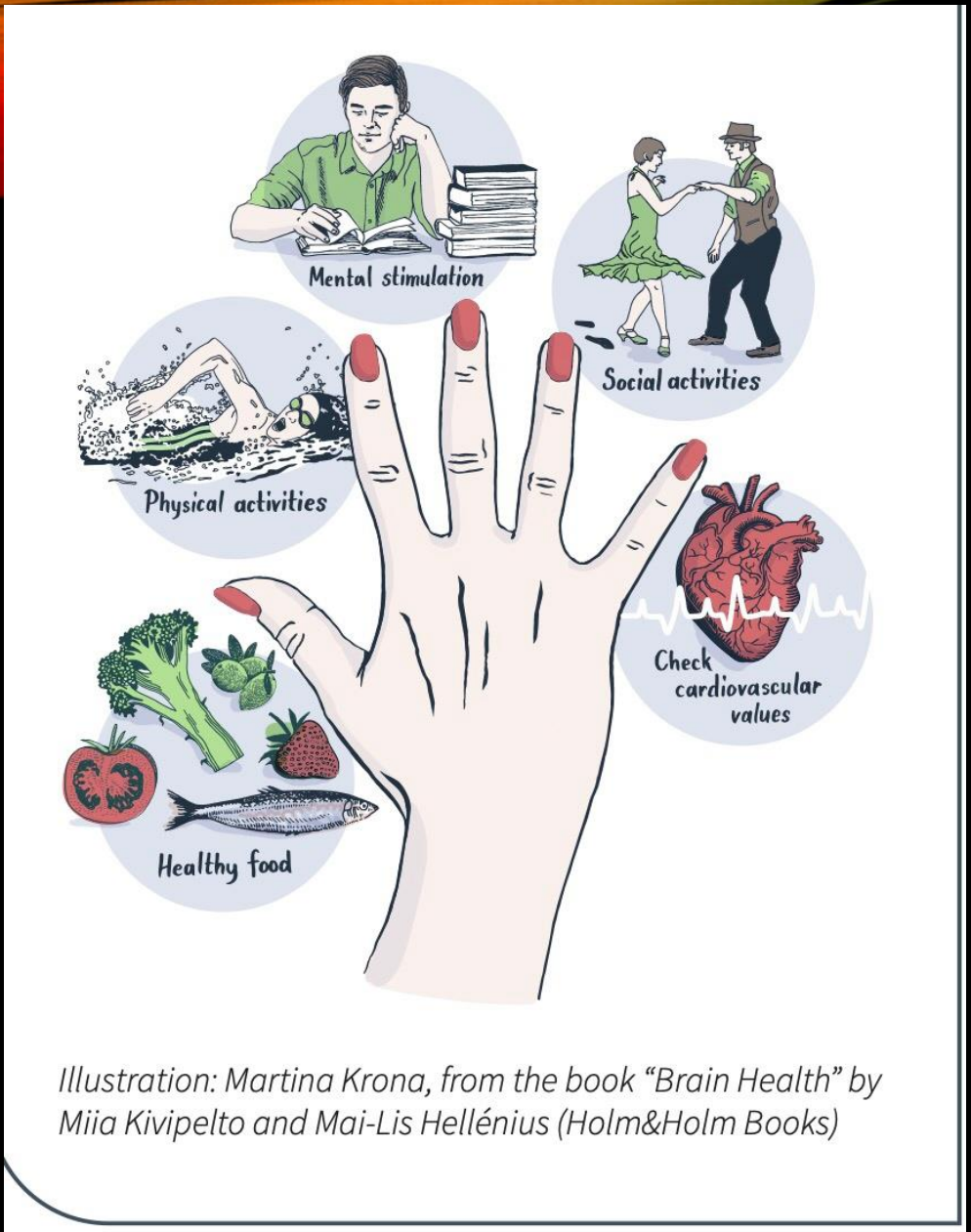


Illustration: Martina Krona, from the book "Brain Health" by Miia Kivipelto and Mai-Lis Hellénius (Holm&Holm Books)

AT THE INDIVIDUAL LEVEL

- Dementia prevention is not a late life concern
- Individuals to take charge of their health
- Adopt good habits for 'Brain health'
  - Better earlier than later
  - Better late than never
  - Better some than none

INSTITUTIONAL LEVEL - MEMORY CLINIC

- For memory clinics locally and worldwide, the increase in health literacy and people seeking early help for memory complaints pose a challenge as well as opportunity
- In need of structured programs to support individuals with MCI who face unique challenges and may have difficulty navigating community programs for healthy individuals
  - Tailor programs that would appeal to a variety of culture / language / socioeconomic status so that minority/disadvantaged groups are not left out
  - Look into use of technology for scalability of non-pharmacological programs to support people at pre-dementia states
- Need for better dementia predictive tools to stratify risk and allocate resources
  - Watch the Artificial intelligence space

INSTITUTIONAL LEVEL – MEMORY CLINIC

- Keep abreast of rapid advancements in disease-modifying treatment and biomarker testing
  - A combination of non-pharm + pharm strategies for dementia prevention may be a reality in the near future
- Healthcare professionals are in the position to advocate for local, national and international powers to provide the best environments for people to take their health into their own hands

INSTITUTIONAL LEVEL – PRIMARY CARE

- Primary care physicians well positioned to support and empower the cognitively unimpaired individual with health behaviour change throughout life
- Risks tend to cluster in individuals: do take a multifactorial approach in interventions
- Areas for considerations:
  - Opportunistic health education for those who do not believe in regular health screening
  - Smoking prevalence remains significant: 1 in 6 daily smokers are in the preparation stage, ready to cut down smoking > assist with identification of barriers and setting goals to take action
  - Encourage the elderly to go for vision/hearing loss screening
  - Leverage on existing community programmes: exercise programs offered by Sport SG for people with chronic diseases and Age Well Everday
  - Referrals to WH memory clinic for patients with early cognitive decline who would benefit from structured programmes to support health behaviour change

AT THE NATIONAL LEVEL

- Policies and initiatives at national level putting us in good stead
- Continue to look into population-level interventions aimed at individual behaviour change
- Effects of recent policy changes and initiatives continue to remain to be seen
- More to be done for the disadvantaged group
  - Clustering of risks: lower socioeconomic group, lower education, poorer health literacy and health-seeking behaviour
  - Engagement and outreach
  - Utilise behaviour science to reach out to this group
- Fund risk reduction research

AT THE INTERNATIONAL LEVEL

- International organizations like the WHO to continue to advocate for Dementia (and its prevention) to be a priority
- In 2017, the 70th World Health Assembly endorsed the Global action plan on the public health response to dementia 2017–2025
  - Action plan includes 7 strategic action areas and dementia risk reduction is one of them
- Global action plan needs to be extended
- More to be done for lower income countries

QUESTIONS?

THANK YOU!