Modelling the impact of modifying lifestyle risk factors on dementia prevalence over the next 45 years

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Background

● Population ageing is often considered the most important factor determining the occurrence of dementia in the future.

● Projections of dementia cases are therefore often based solely on the projected age composition of the population.
  ● from under 200,000 persons in the year 2000
  ● to over 300,000 by the early 2020s, and
  ● rising to approximately 500,000 in the 2030s.

● Emerging evidence for the role of modifiable risk factors in dementia - reduce the disease burden by reducing risk, delaying onset and/or by early intervention to modify disease progression.
Background cont.

- Development of a computer model to estimate the potential impact on dementia prevalence of modifying lifestyle risk factors in Australian men and women aged \( \geq 45 \) years over the next 45 years.

3 risk factors
- smoking RR=1.14
- obesity RR=2.3
- physical inactivity RR= 1.69
Methods

- ‘Dementia Model’ generates a time-series of cross-sectional prevalence snap-shots of dementia in Australia based on population growth and trends in risk factors.

- Age-sex groups broken down into high risk (exposed) and low risk (unexposed) categories e.g. past or current smoker vs never smoked.

- Prevalence rates by risk categories are applied to the projected age-sex population.
Results
Ageing of Australia's Population (next 45 years)

Australia 2006

Australia 2051

Male
Female

Male
Female

200000 100000 0 100000 200000

0 10 20 30 40 50 60 70 80 90 100+

200000 100000 0 100000 200000

0 10 20 30 40 50 60 70 80 90 100+
Prevalence of Dementia

![Graph showing the prevalence of dementia by age and gender. The graph displays two lines: one for males and one for females, with the y-axis representing the rate per 100 persons and the x-axis representing age groups from 45-49 to 85+. The data shows an increase in prevalence with age.]
Projected numbers of people living with dementia considering ageing only
Impact of reducing smoking

- Smoking drops 2.5% every 5 years
- Smoking drops 5% every 5 years
- Smoking drops 10% every 5 years

Per cent difference compared to ‘ageing only’ scenario
Impact of obesity

Per cent difference compared to 'ageing only' scenario

- Ageing only
- Obesity rises 5% every 5 years
- Obesity rises 2.5% every 5 years
- Obesity drops 5% every 5 years
Impact of promoting physical activity

- Physical inactivity rises 2.5% every 5 years
- Physical inactivity drops 2.5% every 5 years
- Physical inactivity drops 5% every 5 years

Per cent difference compared to 'ageing only' scenario
Conclusions

- Despite the significant health and cost burden associated with dementia, there is a major gap in our knowledge about future impacts and the role prevention strategies might play in reducing these.

- As intervention options become available, policy makers will need decision-support tools that allow them to evaluate and compare the likely health and economic outcomes of prevention strategies to identify the most cost effective approaches at a population level.

- Taking into account the role of modifiable risk factors, the Dementia Model provides a new and innovative means of informing health policy.