Mind over matter?

20-year trends in physically and cognitively healthy life years of 65-year-olds in the Netherlands

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Life expectancy at age 65 in the Netherlands

acceleration

deceleration?
1. Are the additional years gained spent in good or poor health / no disability or disability?

2. Is the answer different when looking at mild or severe health conditions / disability?

3. (More recently) Is the answer different for physical and cognitive health?
Prevalence of multimorbidity by age, 1993, the Netherlands

Weighted for sex
Source: Longitudinal Aging Study Amsterdam
Prevalence of multimorbidity by age, 1993 and 2009, the Netherlands

Weighted for sex

Source: Longitudinal Aging Study Amsterdam
Longitudinal Aging Study Amsterdam
Measures of physical health

- Multimorbidity: >=2 of a list of chronic conditions with prevalence >=5%
- Mild disability: difficulty with >=1 of 6 activities
- Severe disability: needing help with >=1 of 6 activities

Three health states:
1. Healthy = no multimorbidity + no mild disability
2. Mildly limited = multimorbidity and/or disability
3. Severely limited = multimorbidity + severe disability
Measures of cognitive health

- Mild cognitive impairment: MMSE $\leq 26$ (Jagger et al, Lancet 2016)
- Numbers too small for study of severe cognitive impairment (MMSE $\leq 18$)
- Adjustment for education (Kittner et al 1986):
  - in each 5-year age group, regress MMSE on education (in years)
  - adjusted MMSE is mean of age group plus residual
  - education-correlation is 0, and age-correlation preserved
Random sample across the Netherlands

5600 men and women

Initial ages 55-85


3-year intervals
Longitudinal Aging Study Amsterdam, Design (2)

1992/93 Baseline cycle $T_1$  
1995/96 Second cycle $T_2$  
1998/99 Third cycle $T_3$  
2001/02 Fourth cycle $T_4$  
2002/03 Baseline new  
2005/06 Fifth cycle $T_5$  
2008/09 Sixth cycle $T_6$  

- $T_1$: 1992/93, $n=3107$
- $T_2$: 1995/96, $n=2545$
- $T_3$: 1998/99, $n=2076$
- $T_4$: 2001/02, $n=1691$
- $T_5$: 2005/06, $n=2165$
- $T_6$: 2008/09, $n=1818$

Select ages 65+
Methods (1)

- Dutch single age-year life tables for 5-year periods: 1991-96, ..., 2006-11
- Select LASA-cycle closest to mid-year of 5-year period, or middle across 2 cycles

|--------|-----------|-----------|-----------|-----------|
Methods (2)

- Calculate age-sex-specific prevalences for each cycle
- Extrapolate prevalences for ages older than observed up to age 100 for each cycle
- Apply Sullivan method to calculate expected years without mild health condition, and expected years with severe condition
Life expectancy from age 65: healthy, mildly, and severely limited* years: men

* Healthy = no multimorbidity + no mild disability
Mildly limited = multimorbidity and/or disability
Severely limited = multimorbidity + severe disability
Life expectancy from age 65: healthy, mildly, and severely limited* years: women

Healthy = no multimorbidity + no mild disability
Mildly limited = multimorbidity and/or disability
Severely limited = multimorbidity + severe disability
Proportion of life expectancy from age 65 in good physical health: 1992-2009
Proportion of life expectancy from age 65 in severely limited health: 1992-2009
Life expectancy from age 65: years in good cognitive health: men

- Healthy = MMSE > 26
- Mildly limited = MMSE <= 26

*Healthy = MMSE > 26
Mildly limited = MMSE <= 26
Life expectancy from age 65: years in good cognitive health: women

*Healthy = MMSE > 26
Mildly limited = MMSE <= 26
Proportion of life expectancy from age 65 in good cognitive health: 1992-2009

* Healthy = MMSE > 26
Proportion of life expectancy from age 65 in good cognitive health: 1992-2009

Men corr

Women corr

* Healthy = MMSE > 26, corrected for years of education
Summary

Physical health:

- Years with at least mild limitations increased, especially in the 1990s → ‘expansion’
- Years with severe limitations high in women, increased in men

Cognitive health:

- Years with mild limitations decreased, especially in the 2000s → ‘compression’
- Even greater increase after correction for education
Discussion

Physical health:
- Did the causes for accelerated increase in LE in the 2000s also stop the expansion of morbidity/disability? (Education, Health care?)

Cognitive health:
- Why did correction for education not flatten the increase in healthy cognitive years?
- Other causes for longer cognitive health?
We’re not there yet

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Winslow Homer, 1892