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Changes in disease life expectancy over time and differences between the sexes in England

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Background

Increased life expectancy with limiting long-term illness in England & Wales, especially for females

[Kelly, Baker, & Gupta 2000; Rasulo, Bajekal, Yar 2007; Robine, Jagger, Clavel, & Romieu 2004]

Increased burden of diseases strain the health services

[Yach, Hawkes, Gould, & Hofman 2004]

As people live longer, they are more likely to suffer of multiple co-occurring conditions

[Cornoni-Huntely, Foley, Gurlanik 1991; Rijken, Kerkhof, Dekker et al. 2005]

Aim

Investigate the health of the England population

Compute a wider measure of morbidity life expectancy beyond the limiting LT illness life expectancy

Explain differences over time and between the sexes through a decomposition method

- Single diseases
- Co-morbidity
- Causes

Methodology

(Sullivan 1971; Mathers 1991; Nussleder & Looman 2004)

$$L_{\text{Dis}} = L_{\text{Life}} \pi_{\text{Dis}}$$

$$\Delta L_{\text{Dis}} = \left(\pi_{\text{Dis}}^{t+n} - \pi_{\text{Dis}}^t \right) \left(\frac{L_{\text{life}}^{t+n} + L_{\text{life}}^t}{2} \right) + \left(L_{\text{Life}}^{t+n} - L_{\text{Life}}^t \right) \left(\frac{\pi_{\text{Dis}}^{t+n} + \pi_{\text{Dis}}^t}{2} \right)$$

Data

Health Survey for England 1991-2005: disease prevalence rates

Population and death counts by cause in England 1991-2005
(Source: Office for National Statistics)

Survey respondents/Population aged 16 and over

Results on 1997-2005 data

Classification of diseases

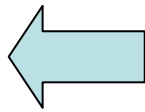
Infectious
diseases

Accidents &
Suicides

Cancer

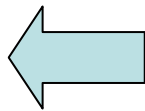
Circulatory system
diseases

Respiratory or
Other chronic diseases



Respiratory diseases
Digestive diseases
Mental disorders
Musculoskeletal diseases

Other acute diseases



Endocrine disorders
Blood diseases
Genitourinary diseases
CNS diseases
Other

Co-morbidity (i.e. all the combinations)

Infectious diseases

Cancer

CDV diseases

Resp. or other chronic diseases

Other acute diseases



CDV & resp. or other chronic

CDV & other acute

Resp/chronic & other acute

CDV, resp/chronic & other acute

Other co-morbidity categories

Change 1998-2004

	MALES 16 +			FEMALES 16 +		
	LE	LE with diseases	LE with LLTI	LE	LE with disease	LE with LLTI
1998	59.7	30.3	15.3	64.5	36.2	18.4
2004	61.5	31.9	15.4	65.7	37.2	18.7
Change	1.8	1.6	0.1	1.2	1.0	0.3

Source: own analysis on HSE and ONS data

Life expectancy with diseases (M)

	DLE	Change (yrs)	Morbidity	Single diseases	Co-morbidity
Males 1998	30.3				
Males 2004	31.9	1.6	0.2	-1.4	1.6

Causes	Single diseases	Co-morbidity
Respiratory or other chronic	- 0.9 yrs	
CDV & other acute		+ 0.8 yrs
Other acute diseases	- 0.5 yrs	
3 CDV & chronic & acute		+ 0.5 yrs

Life expectancy with diseases (F)

	DLE	Change (yrs)	Morbidity	Single diseases	Co-morbidity
Females 1998	36.2	0.9	0.0	-1.5	1.5
Females 2004	37.1				

Causes

Single diseases

Co-morbidity

Other acute diseases

- 0.9 yrs

3 CDV & chronic & acute

+ 0.6 yrs

CDV & acute diseases

+ 0.6 yrs

Respiratory or other chronic

- 0.5 yrs

Life expectancy with diseases (Sexes, 1998)

		DLE	Diff (yrs)	Morbidity	Single diseases	Co-morbidity
1998	Females	36.2	5.9	2.3	0.8	1.5
	Males	30.3				

Causes	Single diseases	Co-morbidity
Other acute diseases	+ 2.3 yrs	
CDV diseases	- 1.2 yrs	
CDV & chronic		+ 0.4 yrs
Chronic & acute		+ 0.4 yrs

Life expectancy with diseases (Sexes, 2004)

		DLE	Diff (yrs)	Morbidity	Single diseases	Co-morbidity
2004	Females	37.1	5.2	1.9	0.8	1.1
	Males	31.9				

Causes

Single diseases

Co-morbidity

Other acute diseases

+ 1.8 yrs

CDV diseases

- 1.0 yrs

Chronic & acute

+ 0.6 yrs

3 CDV & chronic & acute

+ 0.5 yrs

LLT illness life expectancy (Sexes, 1998)

		LLTI LE	Diff (yrs)	Morbidity	Single diseases	Co-morbidity
1998	Females	18.4	3.1	0.8	0.1	0.7
	Males	15.3				

Causes	Single diseases	Co-morbidity
Respiratory or other chronic	+ 0.5 yrs	
CDV diseases	- 0.5 yrs	
3 CDV & chronic & acute		+ 0.3 yrs
CDV & chronic		+ 0.3 yrs

LLT illness life expectancy (Sexes, 2004)

		LLTI LE	Diff (yrs)	Morbidity	Single diseases	Co-morbidity
2004	Females	18.7	3.3	1.4	0.3	1.1
	Males	15.4				

Causes

Single diseases

Co-morbidity

Respiratory or other chronic

+ 0.6 yrs

Chronic & acute

+ 0.6 yrs

CDV diseases

- 0.5 yrs

CDV & chronic diseases

+ 0.4 yrs

Conclusions

Increase of life expectancy with disease larger than LLTI life expectancy

More years with diseases because longer life (mortality biggest effect)

Decreased burden of single diseases and increased co-morbidity burden

Co-morbidity accounts more for differences between the sexes in LLTI expectancy

If co-morbidity had not been included, single diseases would have been overestimated