

INTRODUCTION

Mortality rates from cardiovascular diseases have been declining for several decades in Europe. The decline in mortality from some common cancers is more recent, since the early 90s, and this trend varies with the type of cancer.

In Portugal, cardiovascular diseases and cancer were responsible for almost 60% of all deaths, in 2008.

Cardiovascular diseases and cancer interact as mutual competitive risks and additionally share some risk factors, with smoking and obesity playing a particularly important role.

OBJECTIVE

We aim to describe time trends of death rates from cardiovascular diseases and cancer in the Portuguese population in 1980-2009 and to quantify the contribution of the variation in population's size and age structure, and epidemiologic risk to the change in number of deaths.

RESULTS

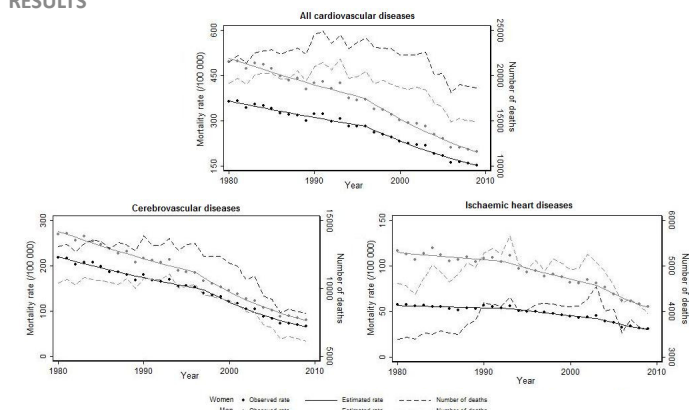


Figure 1 (above). Trend of age-standardised (European population) mortality rate from all cardiovascular diseases, cerebrovascular diseases and ischaemic heart disease, among men and women, 1980-2009

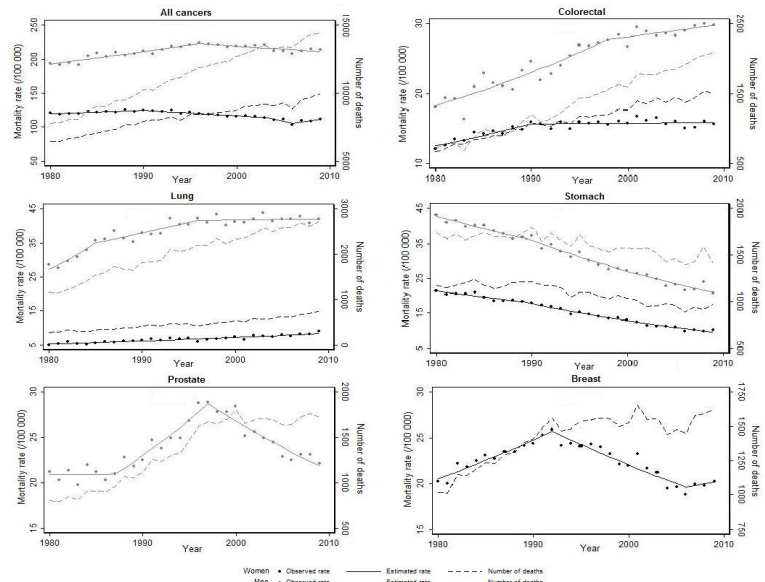


Figure 2 (right). Trend of age standardised (European population) mortality rate from all cancers, colorectal, lung, stomach, prostate and breast cancer, among men and women, 1980-2009

The trends of age-adjusted mortality from all cardiovascular diseases, cerebrovascular diseases and ischaemic heart disease was very similar between men and women, showing a decrease in risk that is accelerating in more recent years, reaching a maximum decrease of age-independent risk of 9% per year for cerebrovascular disease after the mid-1990s (Figure 1 and Table 1). The age-adjusted rates of all outcomes were consistently higher among men, and translated into a higher burden of ischemic heart disease in men but a higher burden of cerebrovascular diseases in women (Figure 1).

The age-adjusted mortality rate from all cancers increased between 1980 and 1996, and then declined until 2009, among men. Among women, we observed a decrease in the mortality rate from all cancers from 1990 to 2006, and then an increase of 1.7% per year, attributable mainly to breast cancer (Figure 2).

The risk of death varies according to the type of cancer and the period considered. For stomach and prostate cancer, the risk of death decreased approximately 4% per year. Among women, the risk of death from lung cancer increased 3% per year in the whole period considered (Table 2).

Table 1. Annual change in age-standardized mortality rate and total number of deaths, and variation in number of deaths due to variation in population size, population structure and risk of death, from all cardiovascular diseases, cerebrovascular diseases and ischaemic heart diseases, 1980-2009

Sex	Disease Period	Annual change in		Annual variation in number of deaths due to variation in			
		Mortality rate % (95% CI)	Number of deaths %	Population size %	Population structure %	Risk of death %	
Men	All cardiovascular diseases						
	1980-1996	-1.9 (-2.3; -1.5)	0.41	0.17	2.05	-2.59	
	1996-2009	-4.8 (-5.4; -4.3)	-2.44	0.31	1.85	-6.56	
	Cerebrovascular diseases						
	1980-1996	-2.5 (-2.8; -2.1)	-0.06	0.16	2.17	-3.60	
	1996-2009	-6.4 (-6.9; -5.9)	-3.92	0.26	1.96	-9.50	
Women	All cardiovascular diseases						
	1980-1996	-1.6 (-2.0; -1.3)	0.75	0.17	1.98	-1.94	
	1996-2009	-4.7 (-5.2; -4.2)	-2.00	0.29	2.07	-6.36	
	Cerebrovascular diseases						
	1980-1997	-2.3 (-2.6; -2.0)	-0.31	0.16	2.02	-3.80	
	1997-2009	-6.7 (-7.2; -6.1)	-3.43	0.25	2.09	-8.47	
Men	Ischaemic heart diseases						
	1980-1992	-0.7 (-1.4; 0.0)	1.07	0.15	1.85	-1.13	
	1992-2003	-2.6 (-3.4; -1.8)	-0.31	0.44	1.49	-2.70	
	2003-2009	-6.0 (-7.9; -4.1)	-4.10	0.21	1.62	-6.59	
	Women	Ischaemic heart diseases					
		1980-1993	-0.4 (-0.9; 0.0)	1.89	0.17	1.86	-0.14
1993-2003		-2.3 (-3.1; -1.5)	0.51	0.44	1.86	-2.14	
2003-2009		-5.7 (-7.1; -4.2)	-3.78	0.19	2.00	-6.79	

Table 2. Annual change in age-standardized mortality rate and total number of deaths, and variation in number of deaths due to variation in population size, population structure and risk of death, from colorectal, lung, stomach, prostate, breast and all cancers, 1980-2009

Sex	Disease Period	Annual change in		Annual variation in number of deaths due to variation in		
		Mortality rate % (95% CI)	Number of deaths %	Population size %	Population structure %	Risk of death %
Men	All cancers					
	1980-1996	0.9 (0.7; 1.1)	2.69	0.21	0.44	2.23
	1996-2009	-0.4 (-0.6; -0.2)	1.49	0.51	2.95	-2.92
	Colorectal					
	1980-1998	2.3 (1.8; 2.9)	4.34	0.39	1.70	3.06
	1998-2009	0.6 (-0.2; 1.4)	2.74	0.59	1.40	0.99
	Lung					
	1980-1985	5.2 (2.5; 8.0)	5.87	0.58	0.84	4.70
	1985-1996	1.6 (0.8; 2.3)	3.27	0.05	1.69	1.80
	1996-2009	0.1 (-0.4; 0.5)	1.62	0.52	1.10	0.08
	Stomach					
	1980-1990	-1.7 (-2.4; -1.0)	0.34	0.16	1.67	-1.75
1990-2009	-2.8 (-3.4; -2.5)	-1.26	0.27	1.38	-4.26	
Prostate						
1980-1987	0.0 (-1.7; 1.8)	2.51	0.36	2.31	-0.15	
1987-1997	3.2 (2.2; 4.2)	5.76	0.14	2.31	3.99	
1997-2009	-2.3 (-2.8; -1.7)	0.21	0.44	2.00	-2.90	
Women	All cancers					
	1980-1990	0.4 (0.2; 0.7)	2.09	0.18	1.36	0.65
	1990-2003	-0.7 (-0.8; -0.5)	1.16	0.39	1.30	-0.58
	2003-2006	-2.5 (-2.3; -0.5)	-1.32	0.36	1.35	-3.12
	2006-2009	1.7 (0.2; 3.2)	4.07	0.14	1.49	2.53
	Colorectal					
	1980-1990	2.2 (1.3; 3.1)	4.91	0.23	1.65	3.51
	1990-2009	0.1 (-0.2; 0.3)	1.81	0.42	1.51	-0.03
	Lung					
	1980-2009	1.6 (1.3; 1.8)	3.53	0.63	1.24	2.60
	Stomach					
	1980-1989	-1.7 (-2.4; -1.0)	0.02	0.16	1.90	-2.41
1989-2009	-3.2 (-3.4; -2.9)	-0.98	0.24	1.31	-3.65	
Breast						
1980-1992	1.9 (1.4; 2.4)	3.62	0.20	1.13	2.63	
1992-2006	-1.9 (-2.4; -1.5)	-0.52	0.36	1.11	-2.40	
2006-2009	0.9 (-3.1; 5.0)	3.79	0.14	1.29	2.43	

CONCLUSION

The 20th century witnessed the success in controlling cardiovascular diseases, and stomach, prostate and breast cancers. The sustainability of these gains is threatened by current trends in some risk factors, particularly smoking among women and excess weight. Mortality trends warn of future population-wide increases in risk.