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Plenary

Changing trends of diseases in Eastern Europe: Closing the gap

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SUMMARY

One of the greatest challenges in Europe at the beginning of the 21st Century is the wide east–west health gap. In 2008, the difference in life expectancy between men in some Western European countries and Russia was 20 years. Whilst trends for life expectancy at birth have improved in many areas around the world, those for Russia, as well as those for some other former Soviet Union countries, have fluctuated greatly and have not shown signs of growth since the middle of the 20th Century. This problem is most acute in Russia and former Soviet Union countries, but is also far from being solved in the states that have made significant progress since 1990 and joined the European Union in the 21st Century. One of the priorities of the Polish presidency of the European Union, which began in July 2011, is the call for a European solidarity for health that could help to close the health gap dividing Europe.

Introduction

One of the greatest challenges for Europe at the beginning of the 21st Century is the wide east–west health gap. In 2008, the difference in life expectancy between men in some Western European countries and Russia was 20 years. Whilst trends for life expectancy at birth have improved in many areas around the world, those for Russia, as well as those for some other former Soviet Union countries, have fluctuated greatly and have not shown signs of growth since the middle of the 20th Century. Furthermore, while premature mortality (<65 years of age) in many Western European countries is at single-digit levels, only around 50% of males will live to 65 years in many areas of Eastern Europe.[1]

In contrast to the significant progress in economic development seen in many Eastern European countries, especially the new European Union (EU) member states, health gaps have not been closed in the first decade of the new millennium and, indeed, some of the differences are widening.[2] Urgent action is therefore required. This article discusses some of the distributions and determinants of disease burden in Eastern Europe, especially for preventable causes such as smoking, diet and alcohol.[3]

Natural history of health development

A great deal of progress has been achieved in Europe over the last half century. Infectious diseases are generally well controlled, and infant mortality is at a single-digit level in nearly all European countries. For example, in 1950, approximately 35% of newborns died before 5 years of age in Poland.

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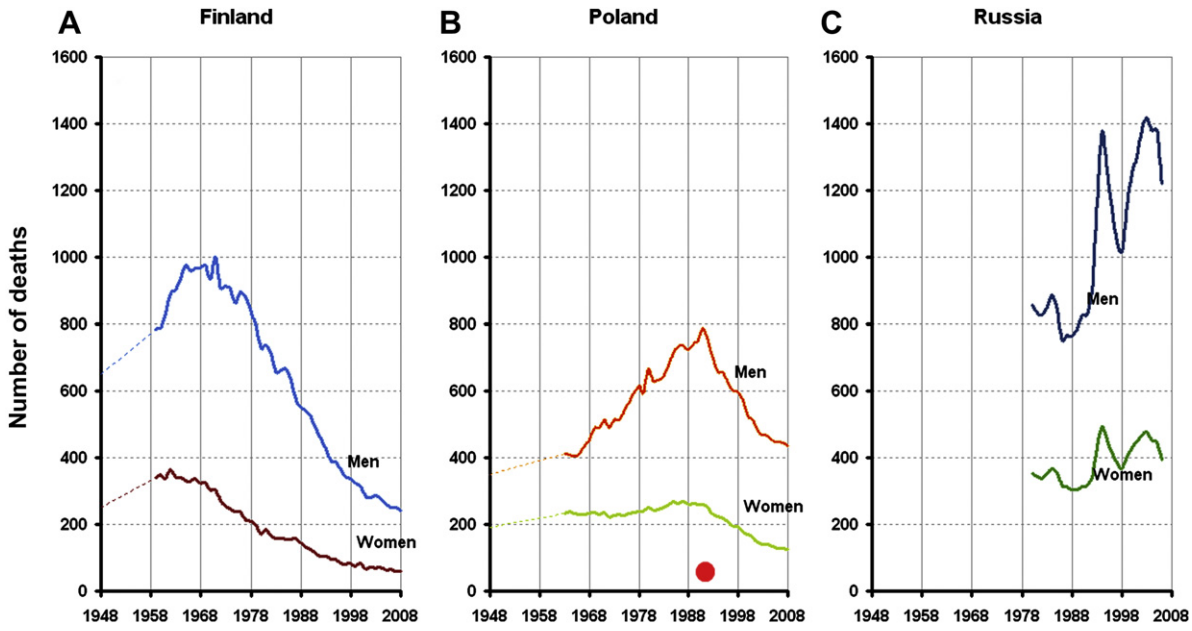

Fig. 1 – Mortality trends from cardiovascular disease at 45–64 years of age.

Today, rates in Poland are nearly identical to those in Western Europe (<1%).[1] Instead, chronic non-communicable diseases and injuries have emerged as the leading causes of premature death (<65 years of age) in the European population, and by far the most significant reason for the health inequality between Eastern and Western Europe for both sexes is death from cardiovascular diseases (CVD). In men, CVD mortality accounts for over half (54%) of the health gap, and in women, it accounts for almost all of the gap (86%).[1]

Historically, cardiovascular mortality and morbidity trends in Europe have demonstrated substantial North–South differences (Seven Countries Study). For example, in Finland, CVD deaths reached the highest levels ever noted in Europe in 1970, which contrasted with the low CVD levels in the Mediterranean region (e.g. Greece). However, as in the rest of Western Europe, the incidence of CVD began to decline after this period, principally due to reductions in risk factors, and also due to increasing evidence-based treatments.[4] Models to calculate the contributing factors for the decrease in CHD deaths in the last few decades in the UK suggest that a reduction in smoking is the single most important cause (48%), followed by blood pressure control (10%) and cholesterol (10%). Treatments contribute 42% in the UK setting, including those for acute myocardial infarction (8%), secondary prevention of vascular disease (11%) and heart failure (13%).[5]

In Eastern Europe, a different pattern emerged in the 1970s and 1980s, as CVD mortality was still on the increase, making

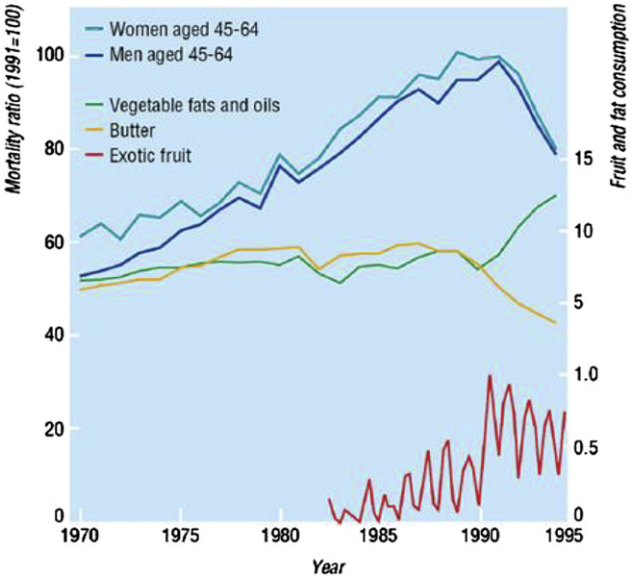

Fig. 2 – Ecological study of response for sharp decline in mortality from ischaemic heart disease in Poland since 1991. Source: Zatoński W, et al. (1998) BMJ; 316: 1047–1051.

this the highest-risk region for vascular diseases in Europe (see Fig. 1). The causes of this phenomenon are not fully understood (MONICA study),[6] but ecological studies indicated dramatic increases in exposure to risk factors that preceded its onset.[7] For example, in 1950–1980, the consumption of tobacco increased linearly in Poland, from around 1000 to 2700 cigarettes/capita/year, reaching the highest contemporary level in the world. Diet was characterized by high (and increasing) consumption of animal fat (also butter) and very low consumption of vegetable oil, fish and fruit. From 1961 to 1980, the total energy supply in Eastern Europe was approximately 5% higher than in Western Europe.[8,9] Similarly, salt

Table 1 – Difference in life expectancy at birth in 2008 between EU10 and EU15.[a]

Decomposition by age groups and groups of diseases

Difference in life expectancy at birth in 2008 between EU10 and EU15 by causes of death

Age group	Cardiovascular disease	Cancer	Injuries	Infectious	Other	Totals	
Males							
0–19	0.01	0.02	0.14	0.01	0.30	0.47	7%
20–44	0.22	0.07	0.46	0.02	0.25	1.02	14%
45–64	1.40	0.63	0.47	0.03	0.69	3.22	45%
≥65	2.20	0.25	0.08	−0.02	−0.07	2.43	34%
Totals	3.83	0.95	1.16	0.04	1.17	7.15	100%
	54%	13%	16%	0%	16%		
Females							
0–19	0.00	0.01	0.07	0.01	0.23	0.33	8%
20–44	0.06	0.05	0.06	0.01	0.06	0.24	6%
45–64	0.58	0.31	0.08	0.00	0.22	1.18	27%
≥65	3.08	0.06	0.01	−0.06	−0.51	2.59	60%
Totals	3.72	0.44	0.22	−0.04	0.00	4.35	100%
	86%	10%	5%	−1%	0%		

Decomposition by risk factors

Difference in life expectancy at birth in 2002 between EU10 and EU15 by tobacco

	Difference attributed to tobacco (years)	Contribution to the difference	%
Males			
0–35	1.00	0.00	
35–44	0.76	0.14	19%
45–64	3.04	1.61	53%
≥65	2.03	0.40	19%
Sum	6.82	2.15	31%
Females			
0–35	0.62	0.00	
35–44	0.21	0.03	15%
45–64	1.21	0.25	21%
≥65	2.63	−0.28	
Sum	4.66	−0.002	−0.05%

Difference in life expectancy at birth in 2002 between EU10 and EU15 by alcohol

	Difference attributed to alcohol (years)	Contribution to the difference	%
Males			
0–19	0.64	0.00	
20–44	1.11	0.42	
45–64	3.04	0.60	
≥65	2.03	0.16	
Sum	6.82	1.18	17%
Females			
0–19	0.54	0.00	
20–44	0.28	0.06	
45–64	1.21	0.03	
≥65	2.63	−0.24	
Sum	4.66	−0.15	−3%

EU10: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia - European Union new member states in May 2004 (excluding Malta and Cyprus, which also joined the EU at the time), and next in January 2007 (Bulgaria, Romania).
a EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and UK – European Union member states before enlargement in May 2004, also 'the old EU' or 'countries of the old EU'.

consumption was much higher in Eastern Europe.[10] Finally, a three-fold increase in alcohol consumption among adults (≥15 years) was noted in Poland, from 4.2 l/capita/year in 1950 to 11.5 l per capita yearly in 1980.[1]

CVD mortality in Poland and some other Eastern European countries (Czech Republic, Hungary, Slovakia, Slovenia) started to decline around 1990 (see Fig. 1), coinciding with political and socio-economic transformation in the region.[1] One striking example of this relationship was the dramatic increase in vegetable oil consumption, especially rapeseed and soybean oil, in the 1990s (from around 6 kg/capita/year in 1990 to 18 kg/capita/year in 2000). This appears to have helped address the previously existing deficiencies of omega-3 fatty acids in the Polish diet (see Fig. 2).[7,11–13] The stability and consistency of this phenomenon seem to support the hypothesis that the most important cause was a dramatic change in diet, potentially brought about by introduction of the market economy.[7] In fact, when models were applied to the Polish population after 1990, dietary (cholesterol) changes were estimated to be attributable for 39% of the reduction in CHD mortality. Reduced smoking and physical activity were estimated to be responsible for 11% and 10%, respectively, with treatments for CHD responsible for 37%.[14]

Whilst the Eastern European EU member states offer the suggestion of improvements in CVD, although shifted in time in relation to Western Europe, the picture for Russia, Ukraine and many other countries of the former Soviet Union is decidedly less optimistic. Mirroring the socio-economic and political upheaval in these states, there has been a huge increase, along with wide fluctuations, in premature mortality. Numerous epidemiological studies led to the consensus that vodka binge drinking is a key reason for these observed changes, which by nature can be preventable.[15,16]

Russia is known to have extreme binge drinking patterns that were exacerbated during the time of political and economic collapse. In the most recent study, a large retrospective case–control study of Russian men,[17] the hazardous use of alcohol in Russia led to a massive increase in classical alcohol-induced health problems (e.g. alcohol poisoning, accidents, suicides, homicides, unassigned external causes, liver cirrhosis, some cancers and also tuberculosis).[18] Moreover, as well as stroke mortality, it also led to a large absolute number of deaths certified as 'non-MI acute ischaemic heart disease' (ICD-10 124).[19,20] Whilst this partly reflects a regional artefact of death certification, it also provides potential insights into alcohol-related cardiovascular harms with high intake. A sobering statistic is that, in total, alcohol is estimated to be attributable for approximately half of all premature deaths in young men in Russia in current studies.

In order to identify and quantify the health differences between the old EU member states (EU15) and those that joined in the 21st Century (EU10), with Russia used as a control country, the EU has funded the Health Equalities Measure.[1] Recent estimates from 2008 on the probability of death before the age of 65 years for men are of the order of 16% in Western Europe, compared with 31% for Eastern Europe and 54% in Russia. Although the absolute probability and rates are approximately half for women, this relative scale also applies across the different European regions.[1]

The burden varies by gender, age group, causes of specific mortality and underlying risk factors. Modelling studies show that the greatest contribution to the health gap in men in the EU10 countries is the high level of premature mortality at 45–64 years of age (representing 45% of the overall health gap between the EU10 and EU15 countries). Likewise, the figures for women demonstrate that the greatest contribution to the health gap is also the high level of premature mortality of women aged 45–64 years [representing 27% of the overall health gap (see Table 1)].[1] Among the causes of death, CVD is by far the most significant reason for the health inequality between the EU10 and EU15 in both sexes. In men, mortality from CVD accounts for 54% of the health gap, whilst sudden deaths from injuries and other non-medical causes account for 16%. In women, mortality from CVD accounts for 86% of the health gap, and mortality from cancer accounts for 10%.

Modelling studies can also help assess underlying risk factors. For example, tobacco accounts for almost half (46%) of the gap for men, and approximately one-fifth (20%) of the gap for women. Similarly, alcohol accounts for one-quarter (25%) of the gap for men, and 6% of the gap for women (see Table 1).[1] It also appears that these measures are not a result of differences in access to health care – in the year of the greatest health gap (1990), there were twice as many doctors and more hospital beds in Eastern Europe compared with Western Europe per 1000 inhabitants.[21]

The picture is not necessarily bleak, and the case study of Poland does demonstrate that there is considerable scope for prevention. For example, from 1990 to 2008, the probability of dying in Poland before 65 years of age in men and women declined by 9 and 5 percentage points, respectively. Life expectancy at birth increased in men and women by 5 and 4 years, respectively, in the same time period. Cardiovascular morbidity and mortality rates decreased in males and females aged 20–64 years by 40%, while the incidence of lung cancer in men also decreased in this age group by 30%.[1] However, all these improvements in health indicators throughout Eastern Europe have been too slow to match the ongoing sustainable health growth in Western Europe.[1] Therefore, these developments only mark the beginning of the road, as the health differences between the old and new Europe were not diminished substantially during the first two decades of economic transformation. Moreover, the current concerns about a global recession make the need for action to tackle inequalities even more urgent.

Conclusion

Put in a west–east context, the wide differences in health between countries still exist and constitute one of the greatest challenges for Europe now and in the future. This problem is most acute in Russia and former Soviet Union countries, but it is also far from being solved in the states that have made significant progress since 1990 and joined the European Union in the 21st Century. One of the priorities of the Polish presidency of the European Union, which began in July 2011, is the call for a European solidarity for health that could help to close the health gap dividing Europe.

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