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INEQUALITY

Widening socioeconomic inequalities in mortality in six Western European countries

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Objectives During the past decades a widening of the relative gap in death rates between upper and lower socioeconomic groups has been reported for several European countries. Although differential mortality decline for cardiovascular diseases has been suggested as an important contributory factor, it is not known what its quantitative contribution was, and to what extent other causes of death have contributed to the widening gap in total mortality.

Methods We collected data on mortality by educational level and occupational class among men and women from national longitudinal studies in Finland, Sweden, Norway, Denmark, England/Wales, and Italy (Turin), and analysed age-standardized death rates in two recent time periods (1981–1985 and 1991–1995), both total mortality and by cause of death. For simplicity, we report on inequalities in mortality between two broad socioeconomic groups (high and low educational level, non-manual and manual occupations).

Results Relative inequalities in total mortality have increased in all six countries, but absolute differences in total mortality were fairly stable, with the exception of Finland where an increase occurred. In most countries, mortality from cardiovascular diseases declined proportionally faster in the upper socioeconomic groups. The exception is Italy (Turin) where the reverse occurred. In all countries with the exception of Italy (Turin), changes in cardiovascular disease mortality contributed about half of the widening relative gap for total mortality. Other causes also made important contributions to the widening gap in total mortality. For these causes, widening inequalities were sometimes due to increasing mortality rates in the lower socioeconomic groups. We found rising rates of mortality from lung cancer, breast cancer, respiratory disease, gastrointestinal disease, and injuries among men and/or women in lower socioeconomic groups in several countries.

Conclusions Reducing socioeconomic inequalities in mortality in Western Europe critically depends upon speeding up mortality declines from cardiovascular diseases in lower socioeconomic groups, and countering mortality increases from several other causes of death in lower socioeconomic groups.

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In all countries with available data, mortality has been shown to be higher among those in less-advantaged socioeconomic positions, regardless of whether socioeconomic position is indicated by educational level, occupational class, or income level. Several studies have shown that these mortality differences widened in many countries during the 1970s and the 1980s.[1–9] Until now changes into the 1990s have been documented for a few countries only. For example, studies from Finland, England & Wales, and Sweden observed a widening of relative inequalities in mortality by occupational class.[1–4]

The explanation of widening inequalities in mortality is only partly known. One factor that has certainly contributed to widening inequalities in total mortality, at least in some countries, is faster mortality decline from cardiovascular diseases, particularly ischaemic heart disease, in the higher socioeconomic groups.[10] Because countries differ in the cause-of-death composition of the mortality excess in lower socioeconomic groups,[11] it is unknown, however, to what extent this is a generalized phenomenon. Also, the contribution of other causes of death has been studied less extensively.[1–10]

The purpose of this paper is to analyse recent trends in socioeconomic inequalities in mortality in a range of European countries. The analysis focused on the extent to which widening inequalities in mortality were driven by faster mortality decline from cardiovascular diseases in higher socioeconomic groups, and what the contribution of other causes of death was.

Data and Methods

Data

For each country, numbers of deaths by 5-year age group, sex, and socioeconomic indicators were obtained for two periods: about 1981–1985 and 1991–1995. These data were obtained from a longitudinal mortality follow-up of population censuses that were carried out around 1981 and around 1991, respectively. People enumerated in the census were followed for 5 years. The Nordic studies cover entire national populations. The data for England & Wales apply to a 1 per cent sample of the population.[12] The Italian study is restricted to the city of Turin.[13] Appendix Table 1 gives the total number of person-years at risk and deaths observed in each study.

Data on educational level of both men and women were available for Finland, Denmark, Norway, and Italy (Turin). Most analyses concern men and women in the age group 30–74 years. Age was measured at the start of each subperiod. In Denmark, people $\geqslant$60 years had to be excluded because the educational level was not known for most men and women $\geqslant$60 years in 1980.

In each study, men and women were classified according to their completed educational level into three levels: up to lower secondary, upper secondary, and post-secondary education. In the analysis we report on differences in mortality between 'up to lower secondary' and 'post-secondary'. In every country, the proportion of the population in the highest educational level is higher among men than among women, and increases over time for both men and women.

Data on occupational class of men were available for Finland, Sweden, Norway, Denmark, England & Wales, and Italy (Turin). Age was measured at the start of each subperiod. Data are analysed for men in the age group 30–59 years. Men $>$60 years had to be excluded because of lack of detailed occupational information on retired men in most studies. Women had to be excluded from analysis because it was impossible for many countries to assign women to occupational classes (on the basis of their own occupation or their partner's occupation) in a way that was both valid and comparable over time.

Four broad occupational classes were distinguished: non-manual workers, manual workers, farmers and farm labourers, and self-employed men. The Erikson-Goldthorpe-Portocarero (EGP) scheme was used as a reference.[14] We report here on differences in mortality between 'non-manual' and 'manual workers' outside the agricultural sector (all self-employed excluded). In all countries, the non-manual and manual classes are the largest two classes, and the share of the manual class decreases over time, while the share of the non-manual class increases.

The occupational class of all men was determined on the basis of the occupation that they had at the time of the population census. For some men, however, information was lacking on their current occupation. This especially applies to men who were economically inactive at the time of the census. In these cases, their occupational class was, as far as possible, determined on the basis of information on a previously held occupation. This information could be obtained in some countries (especially Finland and England & Wales) by linkage to a previous population census.

Despite these efforts, the proportion of men with unknown class was considerable in some countries, and ranged between 1% in Finland and 10% in one of the two time-periods in Sweden and Denmark. The mortality levels of these men are relatively high, due to the fact that most of the men with unknown occupational class are economically inactive men, such as retired or work-disabled men. Unfortunately, their exclusion from analysis is likely to lead to an underestimation of the magnitude of mortality differences between occupational classes, because these men not only have high mortality rates but in addition most of them originate from lower occupational classes.[15] However, an adjustment procedure to correct for this underestimation was used which has been shown to provide less-biased estimates of mortality differences between occupational classes.[15]

Appendix Table 2 provides the International Classification of Disease codes for the causes of death distinguished in the analysis reported in this paper.[16]

Methods

The mortality level per socioeconomic group was measured by means of directly standardized mortality rates. Standardization on the basis of 5-year age groups was done by means of the direct method using the European standard population of 1987. By means of this standardization procedure, differences in age structure between socioeconomic groups, between men and women, between countries, and between periods were controlled for.

In order to determine the contribution of changes in cardiovascular mortality to changing inequalities in total mortality we compared the observed rate ratios (RR) for total mortality in 1981–1985 and 1991–1995 with an RR for total mortality in 1991–1995 as it would have been, if neither the proportion of all deaths due to cardiovascular disease, nor the RR of dying from cardiovascular diseases had changed between 1981–1985 and 1991–1995. This 'expected' RR for 1991–1995 was calculated on the basis of (1) the 1981–1985 proportions of total mortality due to four main groups of causes of death (cardiovascular diseases, neoplasms, other diseases, injuries), (2) the 1981–1985 RR of dying from cardiovascular diseases, and (3) the 1991–1995 RR of dying from neoplasms, and other diseases and injuries.

Results

As Figure 1 shows, relative inequalities in mortality have tended to increase between 1981–1985 and 1991–1995 in all countries represented in this study, both with occupational class (men only) and with educational level (men and women) as a socioeconomic indicator. Non-overlapping 95% CI of the 1981–1985 and 1991–1995 RR are found in Finland, Sweden, Norway, and Denmark (men by educational level only), and steep increases on top of already large inequalities are seen for mortality by occupational class among men in Finland.

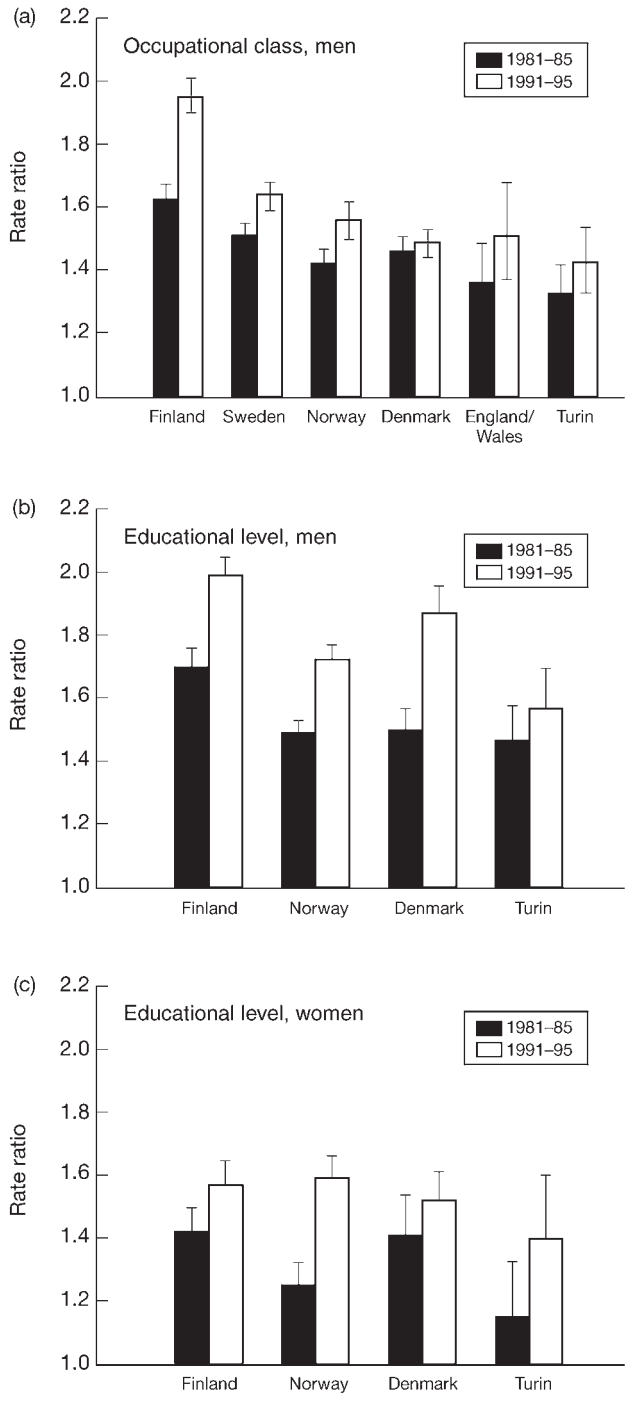

Figure 1 Rate ratios for total mortality by educational level and occupational class, 1981–1985 and 1991–1995

The widening relative gap is mostly due to faster proportional mortality declines in higher socioeconomic groups (Table 1). Mortality declined in all countries and all socioeconomic groups, the only exceptions being low educated Danish men among whom mortality slightly increased, and low educated Norwegian and Danish women among whom mortality has remained stable. In all cases, relative (percentage) mortality decline has been faster in the upper socioeconomic groups. The extent of absolute mortality decline, however, has mostly been similar in the upper and lower socioeconomic groups, due to which absolute inequalities in mortality have been more or less stable.

Faster proportional mortality declines in higher socioeconomic groups are also seen for cardiovascular diseases (Table 2). Mortality from cardiovascular diseases declined in all countries and all socioeconomic groups. Although absolute mortality decline was mostly faster in lower socioeconomic groups, relative (percentage) mortality decline was usually faster in the upper socioeconomic groups. The main exception is Italy (Turin) where proportional mortality decline was similar across socioeconomic groups.

Table 3 shows the contribution of changes in cardiovascular disease mortality to the widening gap in total mortality. Cardiovascular disease mortality made a substantial contribution to the widening gap in total mortality in all countries except Italy (Turin). For example, in Finland for educational differences among men the 'expected' RR for 1991–1995 calculated on the basis of 1981–1985 cardiovascular disease mortality data (constant proportion of total mortality, constant RR) is 1.70, showing that changes in cardiovascular disease mortality contribute more than half of the widening gap in total mortality (1.70 being less than halfway between the RR for total mortality in 1981–1985 [1.61] and 1991–1995 [1.82]). In general, changes in cardiovascular disease mortality explain about half of the widening of the relative gap in total mortality, with the exception of Italy (Turin) where the contribution is nil.

Clearly, other causes of death must have also contributed to the widening gap in total mortality. In an analysis of changes in mortality from the other three large cause-of-death groups (neoplasms, other diseases, injuries, results not shown) we found that RR by occupational class among men between the first half of the 1980s and first half of the 1990s increased for neoplasms in Sweden, England & Wales, and Italy (Turin), for all other diseases in Finland and Sweden, and for injuries in Finland and Italy (Turin) (results not shown).

In several cases, these widening inequalities for other causes of death were due to increasing rates of mortality in lower socioeconomic groups. We found rising rates of mortality from lung cancer, breast cancer, respiratory disease, gastrointestinal disease, and injuries among men and/or women in lower socioeconomic groups in several countries. Table 4 illustrates the changes occurring in mortality from these causes among women with high and low educational levels. For lung cancer, rates of mortality have increased among women in all four countries represented in this Table, with stronger increases among women with low levels of education in Finland, Norway, and Denmark. Women with low levels of education sometimes also

Table 1 Changes in total death rates (per 1000 person-years) by educational level (30–74 years) and occupational class (30–59 years)

Country	Sex	Socioeconomic group	Age standardized death rate		Change 1993–1983	
			1981–1985	1991–1995	Abs.	Rel. (%)
Finland	M	High educ.	9.0	6.9	–2.1[b]	–23
		Low educ.	14.4	12.5	–1.9[b]	–13
	W	High educ.	4.0	3.4	–0.6[b]	–15
		Low educ.	5.7	5.3	–0.4[b]	– 7
	M	Non-manual	4.7	3.6	–1.1[b]	–23
		Manual	7.4	6.9	–0.6[b]	–8
Sweden	M	Non-manual	3.4	2.5	–0.9[b]	–26
		Manual	5.1	4.1	–1.0[b]	–20
Norway	M	High educ.	7.5	6.1	–1.3[b]	–17
		Low educ.	10.8	10.5	–0.3[b]	– 3
	W	High educ.	3.6	3.2	–0.4	–11
		Low educ.	5.2	5.1	–0.0	– 0
	M	Non-manual	3.7	2.8	–0.9[b]	–24
		Manual	5.2	4.3	–0.9[b]	–17
Denmark	M	High educ.[a]	3.5	2.8	–0.7[b]	–20
		Low educ.[a]	5.1	5.3	0.2	4
	W	High educ.[a]	2.4	2.2	–0.2	–8
		Low educ.[a]	3.3	3.3	0.0	0
	M	Non-manual	4.3	3.9	–0.4[b]	–9
		Manual	6.2	5.7	–0.4[b]	–6
England/Wales	M	Non-manual	3.9	3.0	–0.9[b]	–23
		Manual	5.3	4.6	–0.7[b]	–13
Italy/Turin	M	High educ.	7.9	6.3	–1.6[b]	–20
		Low educ.	11.6	10.0	–1.6[b]	–14
	W	High educ.	4.5	3.0	–1.4	–31
		Low educ.	5.4	4.4	–1.0	–19
	M	Non-manual	4.0	3.0	–1.0[b]	–25
		Manual	5.3	4.3	–1.0[b]	–19

[a] Age group 30–59 years.

[b] 95% CI does not include 0.

have rising rates of mortality from breast cancer (Finland), gastrointestinal diseases (Finland, Denmark), respiratory diseases (Norway, Denmark), and injuries (Finland). Italy (Turin) is again the exception, with mostly decreasing rates of mortality among women with low levels of education.

Discussion

Short summary of findings

This study shows that mortality inequalities by educational level and occupational class tended to increase between the first half of the 1980s and first half of the 1990s in all countries participating in this study, but mainly in a relative sense. This was generally due to faster proportional mortality declines in higher socioeconomic groups, and these in turn were partly due to faster proportional mortality declines for cardiovascular diseases, except in Italy (Turin). Although changes in mortality from cardiovascular diseases are an important driving factor behind the widening gap in total mortality, other causes of death also made important contributions. For these causes, widening inequalities were sometimes due to increasing mortality rates in the lower socioeconomic groups. We found rising rates of mortality from lung cancer, breast cancer, respiratory disease, gastrointestinal disease, and injuries among men and/or women in lower socioeconomic groups in several countries.

Data problems

Comparisons between countries may be hampered by differences in data collection and in data classification. This paper, however, did not intend to quantitatively compare countries: the focus is on changes over time for which we found rather consistent results in the countries represented in this study.

The classification of the population into the broad educational and occupational groups distinguished in our study has not changed between the 1980s and 1990s. What has changed, however, is the proportion of the population in the lower socioeconomic groups: this has generally become smaller, and it is possible that in 1991–1995 the lower educational and occupational groups represent a more 'extreme' group than in 1981–1985, in terms of (relative) socioeconomic position and associated material, behavioural, and psychosocial characteristics. In an additional analysis we have looked at changes between the 1980s and 1990s in inequalities in mortality measured with the Relative Index of Inequality, which adjusts for changes in population share of socioeconomic groups.[17] In this analysis we found similar results to those reported in this paper on the basis of the simpler RR: relative inequalities in mortality have widened in all countries participating in this study.[18]

Our analysis is based on a robust distinction between a few broad socioeconomic groups. This may have obscured differences within these broad groups, and the question arises whether similar trends would have been observed had a finer distinction

Table 2 Changes in cardiovascular disease death rates (per 100 000 person-years) by educational level and occupational class

Country	Sex	Socioeconomic group	Age standardized death rate		Change 1993–1983	
			1981–1985	1991–1995	Abs.	Rel. (%)
Finland	M	High educ.	480	315	–165[b]	–34
		Low educ.	761	569	–193[b]	–25
	W	High educ.	155	102	–52[b]	–34
		Low educ.	280	208	–72[b]	–26
	M	Non-manual	238	131	–106[b]	–45
		Manual	344	246	–98[b]	–28
Sweden	M	Non-manual	146	84	–61[b]	–42
		Manual	213	143	–70[b]	–33
Norway	M	High educ.	367	247	–121[b]	–33
		Low educ.	530	460	–70[b]	–13
	W	High educ.	115	82	–32[b]	–28
		Low educ.	213	177	–36[b]	–17
	M	Non-manual	164	91	–73[b]	–45
		Manual	220	149	–71[b]	–32
Denmark	M	High educ.[a]	116	73	–43[b]	–37
		Low educ.[a]	188	141	–47[b]	–25
	W	High educ.[a]	28	21	–7	–24
		Low educ.[a]	65	55	–10[b]	–16
	M	Non-manual	165	110	–55[b]	–33
		Manual	223	160	–63[b]	–28
England/Wales	M	Non-manual	179	116	–63[b]	–35
		Manual	264	196	–68[b]	–26
Italy/Turin	M	High educ.	324	235	–89[b]	–27
		Low educ.	436	306	–130[b]	–30
	W	High educ.	106	68	–38[b]	–36
		Low educ.	194	132	–62[b]	–32
	M	Non-manual	136	90	–46[b]	–34
		Manual	166	105	–61[b]	–37

[a] Age group 30–59 years.

[b] 95% CI does not include 0.

Table 3 Contribution of cardiovascular diseases to the widening relative gap in total death rates

Country	Sex	Socioeconomic variable	Rate ratio for total mortality		
			1981–1985 (obs.)	1991–1995 (obs.)	1991–1995 (expected if no changes in cardiovascular disease mortality had occurred)[a]
Finland	M	Education	1.61	1.82	1.70
	W	Education	1.41	1.55	1.51
	M	Occupation	1.59	1.92	1.66
Sweden	M	Occupation	1.48	1.63	1.52
Norway	M	Education	1.45	1.71	1.54
	W	Education	1.44	1.61	1.55
	M	Occupation	1.41	1.53	1.42
Denmark	M	Education	1.48	1.86	1.77
	W	Education	1.39	1.52	1.47
	M	Occupation	1.42	1.46	1.43
England/Wales	M	Occupation	1.36	1.52	1.43
Italy/Turin	M	Education	1.47	1.59	1.59
	W	Education	1.21	1.44	1.44
	M	Occupation	1.34	1.45	1.45

[a] Calculated on the basis of (1) the 1981–1985 proportion of total mortality due to cardiovascular diseases, (2) the 1981–1985 rate ratio of dying from cardiovascular diseases, and (3) the 1991–1995 rate ratios of dying from neoplasms, other diseases, and injuries (see Methods).

been made. This point could be evaluated with more detailed data on mortality by occupational class from England & Wales. Changes over time in the manual/non-manual RR, as reported in this paper, could be compared with trends in the ratio of mortality of social class IV/V (semi- and unskilled workers) to social class I/II (professional and managerial workers). In the first case, the RR increased from 1.36 to 1.51, whereas in the second case the RR increased from 1.61 to 1.80, reflecting a similar change in relative excess mortality in the lower socio-economic groups.

Table 4 Changes in death rates (per 100 000 person-years) for selected causes, women by educational level

			Change 1993–1983 (absolute)				
Country	**Sex**		Lung cancer	Breast cancer	Gastrointestinal diseases	Respiratory diseases	Injuries
Finland	W	High educ.	+1	–10	+1	–0	+1
		Low educ.	+3[a]	+4[a]	+8[a]	+2	+13[a]
Norway	W	High educ.	+3	+5	–2	+0	–4
		Low educ.	+16[a]	+1	+0	+9[a]	–0
Denmark	W	High educ.	+3	+0	–3	+2	–16[a]
		Low educ.	+7[a]	–1	+6[a]	+4[a]	–8[a]
Italy/Turin	W	High educ.	+7	–26	–15[a]	–4	–8
		Low educ.	+2	–4	–7[a]	–8[a]	–10[a]

[a] 95% CI does not include 0.

The educational and occupational data do not cover the same age range: educational mortality data in most countries are available until (at least) the age of 74, but for occupational class men ⩾60 years had to be excluded from the analyses (see Data and Methods). In order to cover as large a part as possible of deaths as they relate to socioeconomic factors, we decided not to harmonize the age ranges of the analyses. However, this implies that a direct comparison between the results for education and occupation may be subject to bias. In order to see what the effect of age range restriction is, we did an additional analysis in which we restricted the data on mortality by educational level to the age group 30–59 years. As expected, in this younger age range absolute inequalities in mortality are smaller, but relative inequalities larger than in the original analyses. The pattern of changes over time, however, is largely identical. While absolute differences in total mortality by educational level were fairly stable, relative inequalities have increased in the age group 30–59 as they did in the age group 30–74 years, mainly due to faster mortality declines in the higher educational groups. Also, changes in cardiovascular disease mortality contribute importantly to the widening gap in total mortality (results not shown).

Comparison with previous studies

Widening inequalities in mortality in the period covered by this study have been reported before for Finland, Sweden, and England & Wales.[1–4] What this study adds are two other Nordic countries, Norway and Denmark, and a Mediterranean country (Italy [Turin]).

While declines in mortality by occupational class among men in Norway appear to be quite similar to those in Sweden, Denmark presents a slightly different picture, with less favourable mortality trends in manual and non-manual groups. Both in Norway and Denmark, mortality trends among women are generally less favourable than among men, with stagnating mortality among low educated women. Among Danish men with low education total mortality has slightly increased. This shows that the favourable impression given by the Swedish trends in mortality by occupational class among men cannot be generalized to other Scandinavian countries, and perhaps not even to Swedish women.

Although Turin cannot be seen to be representative of Italy as a whole, let alone other southern European countries for which longitudinal mortality data are generally lacking, it does present an interesting contrast to the other countries represented in this study. In this southern European city relative inequalities in mortality show a slight tendency to increase as they do in England & Wales and the Nordic countries, but this is not due to faster declines in mortality from cardiovascular diseases in the upper socioeconomic groups. On the contrary: if anything, cardiovascular disease declines faster in lower socioeconomic groups in Turin. Again, this shows the lack of generalizability of this type of finding from one part of Europe to the other.

While the international (English language) literature on trends in inequalities in mortality is dominated by reports from England & Wales, the latter are put into perspective by the results of our overview. The widening of the gap in total mortality in England & Wales has not been stronger than elsewhere, and appears to be an expression of developments that are shared with other northern European countries.

Implications

Faster proportional declines of mortality from cardiovascular diseases in the upper socioeconomic groups may be due to faster (proportional) changes in various 'proximate' determinants of cardiovascular disease, such as health-related behaviours (smoking, diet, exercise, …) or health care interventions (hypertension detection and treatment, thrombolytic therapy, …).[3,19] The similarity between the developments in England & Wales and the Nordic countries on the one hand, and the dissimilarity with the developments in Italy (Turin) on the other hand, suggest that changes in health-related behaviours are an important part of the explanation. It has been shown before that there are important differences between northern and southern Europe in the social patterning of behaviours like smoking and diet.[20,21] For example, over the past decades smoking prevalence has declined faster in upper than in lower socioeconomic groups in northern Europe, resulting in strong socioeconomic gradients in smoking. In some parts of southern Europe smoking is still more prevalent in upper socioeconomic groups, particularly among women.[21]

Some of the cause-specific rises in mortality observed in lower socioeconomic groups also suggest an important role of health-related behaviours. Rising rates of mortality from lung cancer and respiratory disease probably point to the (delayed) effects of rising smoking prevalences in lower socioeconomic groups. Rising rates of breast cancer mortality among low educated women, as observed in Finland, may be due to

changes in reproductive behaviour.[22] The common determinant of rising rates of mortality from gastrointestinal diseases (which include liver cirrhosis as an important component) and injuries may be an increase in excessive alcohol consumption.[23]

While these behavioural risk factors may be implicated as 'proximate' determinants, this social patterning of behaviour in turn is likely to be due to underlying structural factors like material disadvantage, unfavourable psychosocial conditions, or lack of access to behaviour change support.[24,25] Changing these behaviour patterns will therefore require much more than health education. Innovative approaches that combine individual behaviour change support with environmental interventions to remove barriers for healthy behaviour need to be developed.

In conclusion, reducing socioeconomic inequalities in mortality in Western Europe critically depends upon speeding up mortality declines from cardiovascular diseases in lower socioeconomic groups, and countering mortality increases from several other causes of death (lung cancer, breast cancer, respiratory diseases, gastrointestinal diseases, injuries) in lower socioeconomic groups.

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Appendix Table 1

Number of person-years at risk and deaths observed in each country

		Education[a]				Occupation[b]	
		Men		Women		Men	
Country	**Period**	Person-years[c]	Deaths	Person-years[c]	Deaths	Person-years[c]	Deaths
Finland	1981–1985	5584	82 086	6325	52256	4491	31 598
	1991–1995	6438	75 597	6906	44990	5144	29 082
Sweden	1981–1985	n.a.	n.a.	n.a.	n.a.	7199	26 653
	1991–1995	n.a.	n.a.	n.a.	n.a.	8045	27 182
Norway	1981–1985	4709	64 945	4927	37 270	3278	16 338
	1991–1995	5076	56 160	5228	34 027	3699	12 133
Denmark	1981–1985	4043[d]	23 021[d]	4049[d]	14 682[d]	4360	21 276
	1991–1995	3492[d]	23 145[d]	4549[d]	15 263[d]	4589	18 379
England/	1981–1985	n.a.	n.a.	n.a.	n.a.	458	2372
Wales	1991–1995	n.a.	n.a.	n.a.	n.a.	497	1941
Italy/Turin	1982–1986	1322	15 958	1511	10 700	1041	5361
	1992–1996	1206	12 727	1363	7941	886	3785

[a] Age group 30–74 years.

[b] Age group 30–59 years.

[c] In 000s.

[d] Age group 30–59 years.

Appendix Table 2

Disease	**ICD-8[a]**	**ICD-9[b]**	**ICD-10[c]**
Neoplasms	140–239	140–239	C00–D48
Lung cancer	162	162	C33, C34
Breast cancer	174	174, 175	C50
Cardiovascular diseases	390–458	390–459	I00–I99
Cerebrovascular disease	430–438	430–438	G45, G46, I60–I69
Ischaemic heart disease	410–414	410–414	I20–I25
Gastrointestinal diseases	520–577	520–579	K00–K93
Injuries/external causes	E800–E999	E800–E999	V01–Y89
Respiratory disease	460–519	460–519	J00–J99

[a] International Classification of Diseases, Eighth Revision: Sweden (1980–1986), Norway (1980–1985), Denmark (1981–1993).

[b] International Classification of Diseases, Ninth Revision: Finland, Italy, Sweden (1987–1995), Norway (1986–1995), England.

[c] International Classification of Diseases, Tenth Revision: Denmark (1994–1995).